

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Thompson, Kingsbury County
LKT-Lake-55-801
2017

Lake Information

Name:	Thompson	Maximum Depth:	26 Feet
County:	Kingsbury	Mean Depth:	15 Feet
Legal Description:	T110N-R55W-Sec.20-22, 28-33; T109N-R55W-Sec.4-9, 16-17;		
Surface Area:	14,526 Acres		

Surveys and Investigations

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

<u>Gear</u>	<u>Date</u>	<u>Effort</u>
AFS std frame net	July 25, 2017	5 net-nights
AFS std frame net	July 26, 2017	1 net-nights
AFS std gill net	July 25, 2017	9 net-nights
AFS std gill net	July 26, 2017	4 net-nights

Common Fish Species Present

Walleye

White Bass

Common Carp

Yellow Perch

Northern Pike

Smallmouth Bass

Black Crappie

Black Bullhead

Bigmouth Buffalo

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
AFS std frame net	Black Bullhead	0.3	0.3	50		50			
	Black Crappie	0.2	0.2	0		0		113	
	Common Carp	5.0	4.5	97		87			
	Northern Pike	0.8	1.0	100		60		83	7
	Smallmouth Bass	0.7	0.7	25		0		91	2
	Walleye	2.0	1.6	25		17		82	2
	White Bass	0.7	0.6	25		0		90	6
	Yellow Perch	0.2	0.2	100		100		105	
AFS std gill net	Bigmouth Buffalo	0.2	0.1	0		0			
	Black Bullhead	0.5	0.4	100		57			
	Black Crappie	0.6	0.3	100		100		98	2
	Common Carp	2.7	0.7	97		46	13		
	Northern Pike	0.5	0.3	100		43		80	2
	Walleye	6.0	1.0	15	6	1		83	1
	White Bass	14.0	4.7	99		51	5	92	1
	Yellow Perch	4.6	1.7	78	8	48	9	114	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	
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		
AFS std frame net	Black Bullhead										0.3	0.3	
	Black Crappie										0.2	0.2	
	Common Carp										5.0	5.0	
	Northern Pike										0.8	0.8	
	Smallmouth Bass										0.7	0.7	
	Walleye										2.0	2.0	
	White Bass										0.7	0.7	
	Yellow Perch										0.2	0.2	
AFS std gill net	Bigmouth Buffalo										0.2	0.2	
	Black Bullhead										0.5	0.5	
	Black Crappie										0.6	0.6	
	Common Carp										2.7	2.7	
	Northern Pike										0.5	0.5	
	Walleye										6.0	6.0	
	White Bass										14.0	14.0	
	Yellow Perch										4.6	4.6	
fall night EF-WAE	Walleye	13.0	7.5	24.0	186.5	3.5	31.0	40.5	35.5			42.7	
large frame net	Bigmouth Buffalo	0.3	1.8	1.7	0.2	3.5	0.5					1.3	
	Black Bullhead			0.1	2.6	29.7	4.7					9.3	
	Black Crappie	1.8	0.1	1.8	50.8	20.4	6.3					13.5	
	Bluegill			0.1	0.2	0.3						0.2	
	Common Carp	7.5	0.6	7.0	10.4	15.9	4.6					7.7	
	Northern Pike	1.3	1.1	1.4	4.4	13.6	3.4					4.2	
	Smallmouth Bass	0.3	0.7	0.3	1.0	0.3	0.2					0.5	
	Walleye	2.9	8.3	9.5	2.4	4.9	3.1					5.2	
	White Bass				0.8	2.0	1.0						1.3
	White Sucker	0.3	0.2					0.3					0.3
	Yellow Perch	0.1			0.8	0.2	0.1						0.3
std exp gill net	Bigmouth Buffalo	1.6	0.2									0.9	
	Black Bullhead				0.2			1.2		0.3		0.6	
	Black Crappie		0.2	0.0	20.6	4.7	10.8	1.6	2.3	2.3		5.3	
	Common Carp	3.4	3.0	0.7	5.6	0.7	1.8	1.0	1.0	1.0		2.0	
	Lamprey Family										0.0	0.0	

		CPUE										
Gear	Species	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Avg
std exp gill net	Northern Pike	0.2	0.4	0.3	2.8	3.3	1.8	4.0	1.5	0.7		1.7
	Spottail Shiner		0.0		0.0	0.0	0.0	0.0				0.0
	Walleye	7.4	20.2	37.0	22.2	26.7	15.2	13.4	20.5	22.3		20.5
	White Bass		3.2	0.0	0.6	5.7	4.0	4.6	6.8	5.3		3.8
	White Sucker			0.3				0.2				0.3
	Yellow Perch	2.8	3.8	12.0	29.0	18.0	13.0	20.2	12.8	10.7		13.6
std frame net (3/8 inch)	Bigmouth Buffalo								0.3	0.4		0.4
	Black Bullhead							3.6	0.4	0.4		1.5
	Black Crappie							5.6	1.7	0.6		2.6
	Common Carp							2.1	10.0	6.7		6.3
	Northern Pike							2.5	5.8	5.4		4.6
	Smallmouth Bass							0.2	0.1	1.0		0.4
	Walleye							1.7	1.0	3.1		1.9
	White Bass							0.5	0.6	3.6		1.6
	White Sucker							0.6		0.4		0.5
	Yellow Perch							0.1				0.1

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											
			2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		
AFS std frame net	Black Crappie	PSD											0	
		PSD-P											0	
		Wr											113	
	Northern Pike	PSD												100
		PSD-P												60
		Wr												83
	Walleye	PSD												25
		PSD-P												17
		Wr												82
Yellow Perch	PSD												100	
	PSD-P												100	
	Wr												105	
AFS std gill net	Black Crappie	PSD											100	
		PSD-P											100	
		Wr											98	
	Northern Pike	PSD												100
		PSD-P												43
		Wr												80
	Walleye	PSD												15
		PSD-P												1
		Wr												83
Yellow Perch	PSD												78	
	PSD-P												48	
	Wr												114	
fall night EF-WAE	Walleye	Wr	96	107	91	90	82	81	85	83				
large frame net	Black Crappie	PSD	100	100	100	16	98	100						
		PSD-P	65	100	95	3	32	93						
		Wr	103	94	93	124	115	103						
	Northern Pike	PSD	93	85	67	64	35	76						
		PSD-P	64	46	33	13	3	14						
		Wr	75	75	83	87	73	70						

Gear	Species	Index	Year									
			2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
large frame net	Walleye	PSD	22	3	15	59	41	62				
		PSD-P	3	2	0	3	14	41				
		Wr	80	84	87	88	81	78				
	Yellow Perch	PSD	100			78	50	100				
		PSD-P	100			56	50	100				
		Wr	116			117	101	103				
	std exp gill net	Black Crappie	PSD		100	0	1	64	100	100	100	100
			PSD-P		100	0	0	7	83	100	100	86
			Wr		107		123	120	88	107	101	104
Northern Pike		PSD	100	100	0	21	50	67	80	100	100	
		PSD-P	100	100	0	0	0	22	15	33	0	
		Wr	86	85	94	87	85	74	83	80	80	
Walleye		PSD	27	1	13	41	15	21	22	20	12	
		PSD-P	3	0	1	1	0	0	0	5	0	
		Wr	84	87	89	88	85	81	80	86	83	
Yellow Perch		PSD	57	95	69	62	80	94	54	82	63	
		PSD-P	50	11	50	28	20	46	23	31	44	
		Wr	118	120	113	112	114	105	106	110	100	
std frame net (3/8 inch)		Black Crappie	PSD							91	100	100
			PSD-P							88	88	100
			Wr							112	106	115
		Northern Pike	PSD							80	95	100
			PSD-P							32	31	65
			Wr							86	79	91
	Walleye	PSD							41	60	50	
		PSD-P							18	10	21	
		Wr							84	86	89	
	Yellow Perch	PSD							0			
		PSD-P							0			
		Wr							116			

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+
2013	69		237 (4)	270 (51)	257 (12)		346 (2)	366 (1)			
2008	20		209 (2)	254 (12)			309 (1)	319 (5)			

Species: Walleye

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2017	81	219 (3)	291 (40)	352 (23)	391 (11)		343 (1)				507 (2)
2016	88	218 (21)	294 (41)	346 (19)	412 (3)	471 (4)					
2015	129	214 (49)	280 (45)	363 (7)	374 (17)	412 (8)	434 (1)	544 (1)	525 (1)	555 (1)	
2014	93	209 (26)	324 (2)	326 (50)	398 (11)			465 (4)			
2013	83	201 (1)	279 (55)	376 (20)	407 (2)	463 (1)	433 (4)				
2012	109	212 (34)	331 (63)	419 (5)	407 (3)	415 (4)					
2011	142	253 (55)	328 (7)	400 (11)	386 (70)	403 (1)				514 (1)	
2010	114	250 (11)	318 (18)	351 (83)	450 (1)	530 (1)					
2009	109	213 (4)	277 (95)	360 (10)							
2008	64	212 (30)	343 (24)		441 (7)			493 (2)		493 (1)	

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	51	153 (4)	210 (27)	255 (4)	264 (11)	286 (4)	245 (1)				
2014	102	147 (45)	215 (14)	240 (27)	268 (9)	260 (6)					
2013	65	173 (2)	215 (18)	257 (40)	290 (2)	296 (1)	294 (2)				
2012	54	161 (10)	229 (34)	259 (8)	254 (1)	284 (1)					
2011	145	175 (55)	230 (47)	264 (2)	268 (32)			271 (10)			332 (2)
2010	36	168 (11)		251 (21)	269 (3)	310 (1)					

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2009	19		224 (18)		280 (1)						
2008	14	156 (6)		241 (1)	276 (4)	303 (1)		308 (2)			

Fish Condition

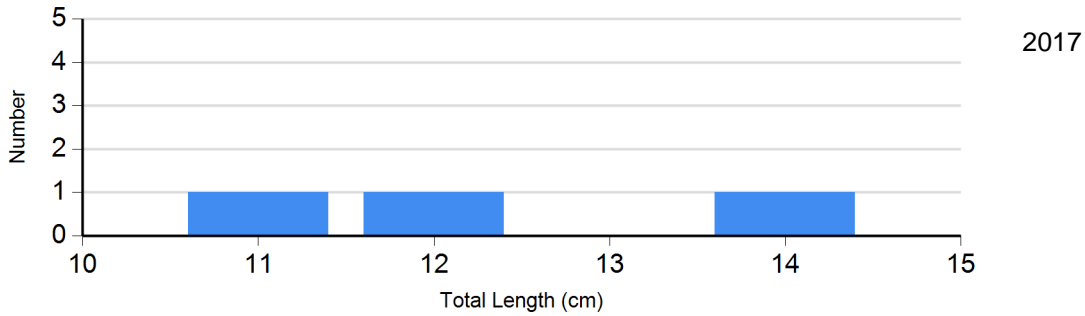
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

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	2013	0		5	107 (3.0)	61	103 (1.2)	3	88 (8.0)
	2014	5	120 (6.6)	2	111 (3.5)	45	112 (1.2)	4	108 (3.6)
	2015	0		2	113 (0.6)	9	108 (1.7)	6	102 (1.2)
	2016	0		0		3	119 (10.4)	2	109 (6.7)
	2017	1	113	0		0		0	
Northern Pike Gill Net	2013	3	72 (4.3)	4	72 (4.3)	2	82 (5.9)	0	
	2014	4	79 (4.2)	13	85 (1.9)	3	80 (7.5)	0	
	2015	0		4	78 (4.4)	2	83 (2.8)	0	
	2016	0		2	80 (3.0)	0		0	
	2017	0		4	78 (1.2)	2	83 (3.3)	1	86
Walleye Gill Net	2013	60	83 (1.4)	16	76 (2.8)	0		0	
	2014	52	79 (0.6)	15	84 (2.0)	0		0	
	2015	66	87 (0.8)	12	83 (1.7)	4	82 (4.1)	0	
	2016	59	83 (0.9)	8	83 (1.4)	0		0	
	2017	66	83 (0.6)	11	80 (0.9)	1	115	0	
Yellow Perch Gill Net	2013	4	119 (6.2)	31	106 (2.7)	29	103 (3.6)	1	82
	2014	46	101 (1.3)	32	113 (1.6)	23	105 (1.7)	0	
	2015	9	112 (3.7)	26	110 (1.8)	16	110 (3.0)	0	
	2016	12	89 (5.8)	6	114 (4.1)	14	103 (2.6)	0	
	2017	13	114 (2.8)	18	114 (2.8)	25	115 (3.0)	4	108 (0.4)

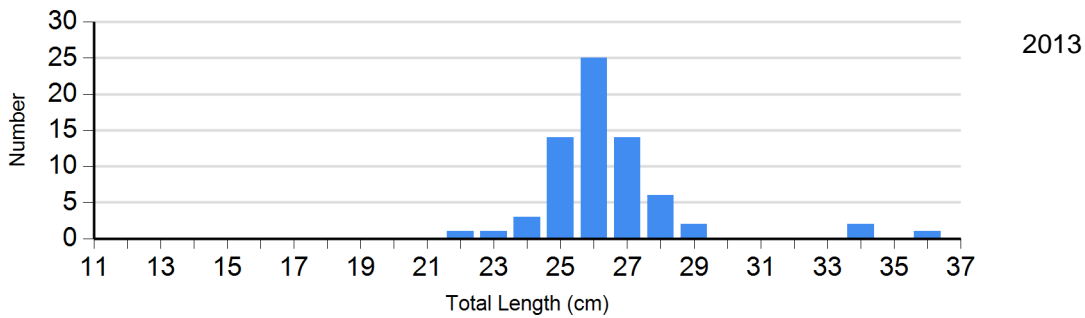
Length Frequency Distribution

Length frequency histogram of species sampled by year.

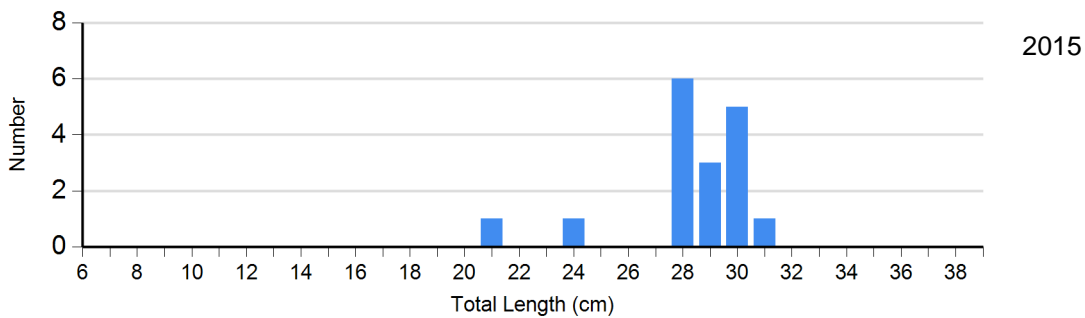
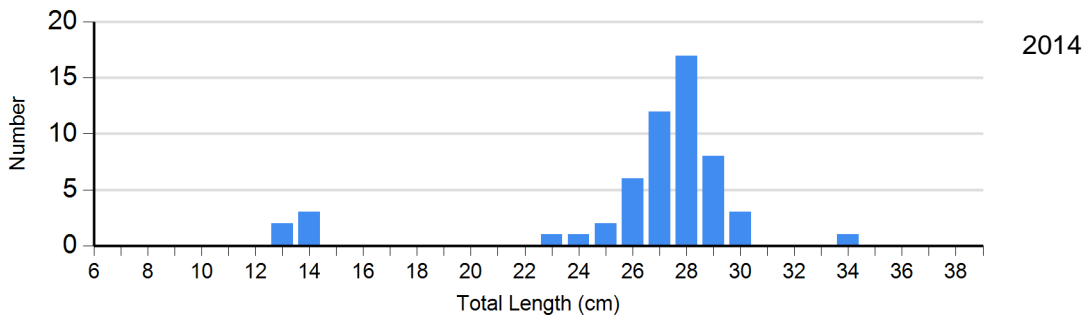
Species: Black Crappie
Gear: AFS std frame net

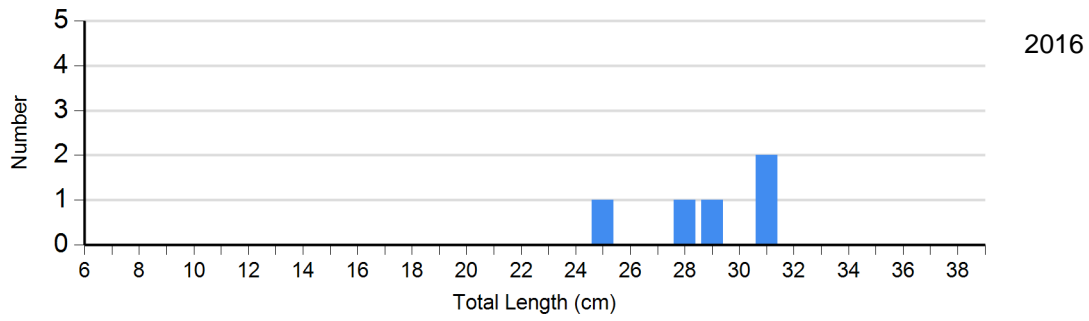


Species: Black Crappie
Gear: large frame net

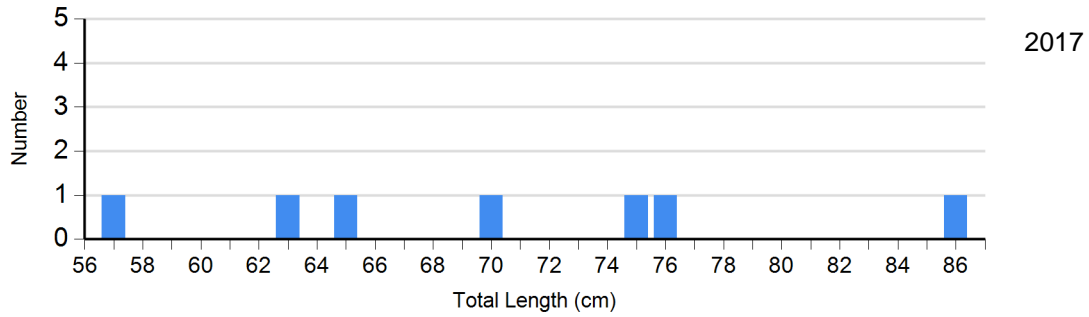


Species: Black Crappie
Gear: std frame net (3/8 inch)

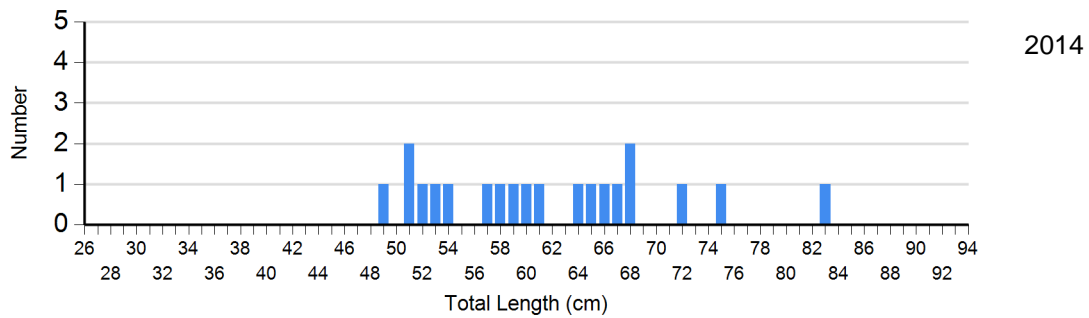
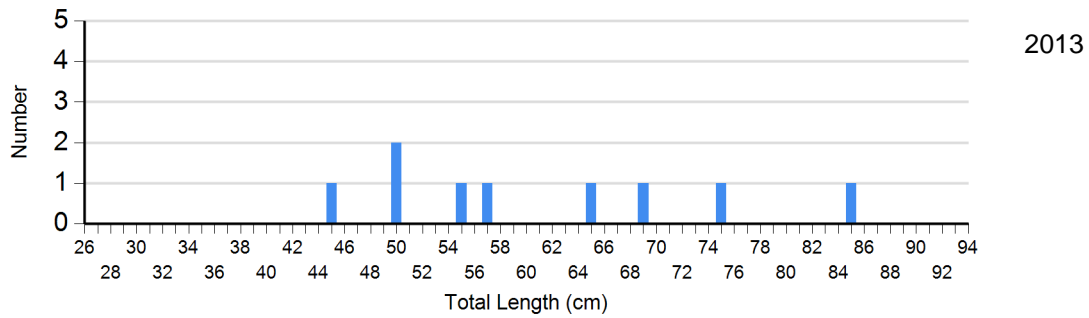


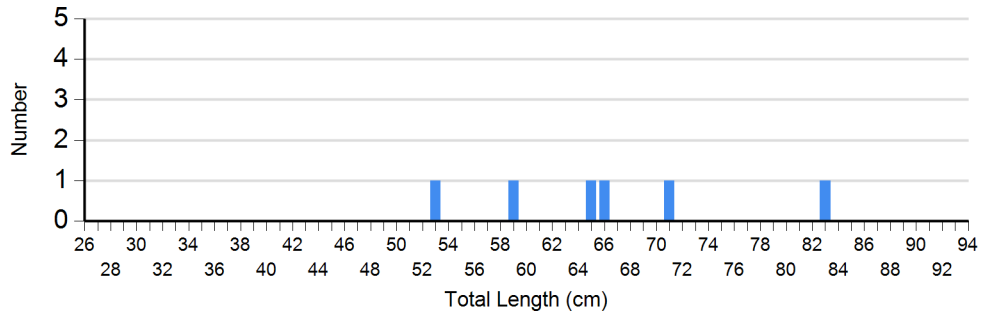


Species: Northern Pike
Gear: AFS std gill net

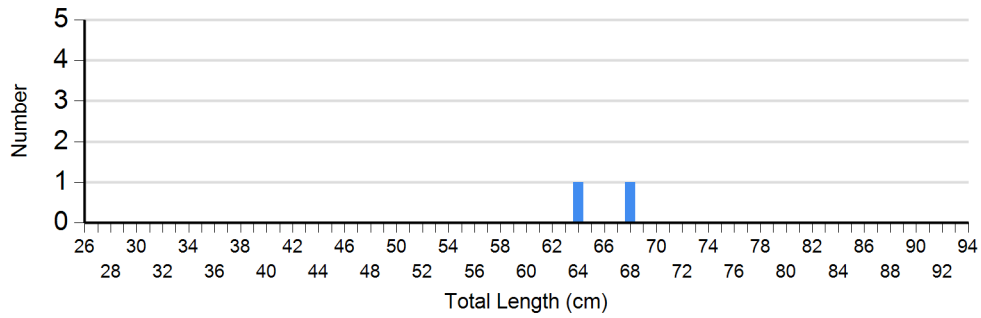


Species: Northern Pike
Gear: std exp gill net



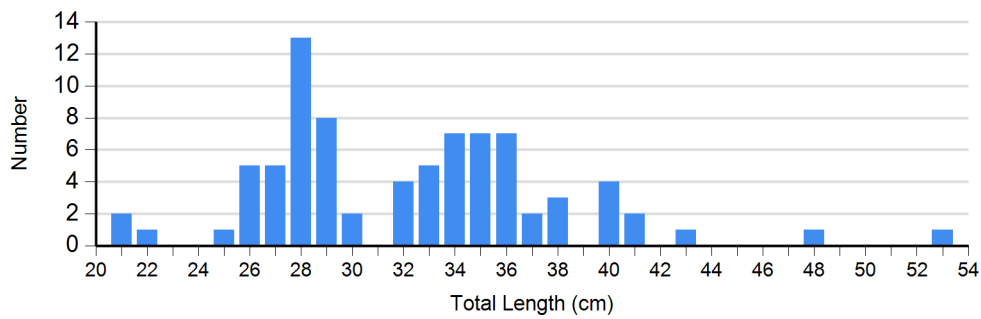


2015



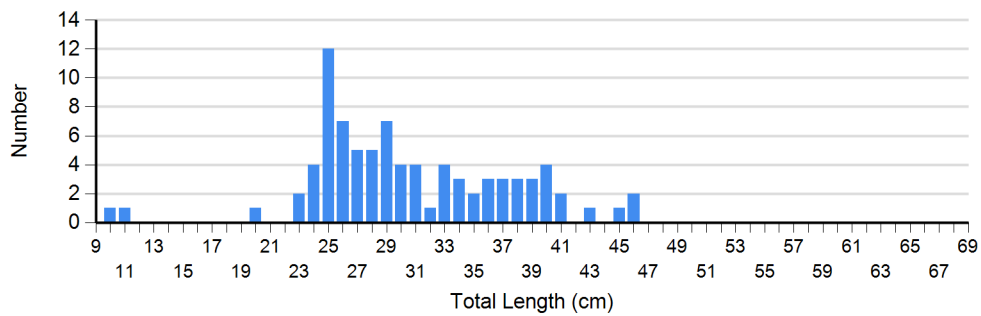
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Species: Walleye
Gear: AFS std gill net

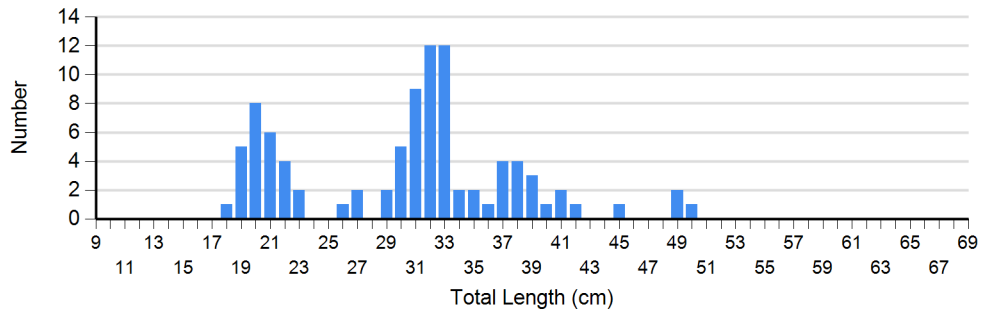


2017

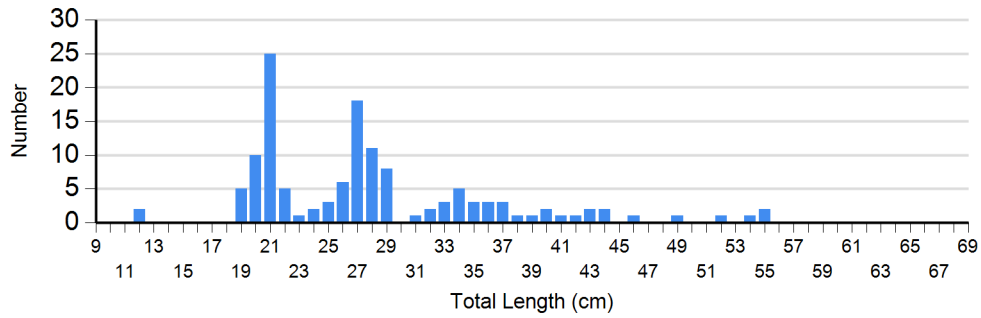
Species: Walleye
Gear: std exp gill net



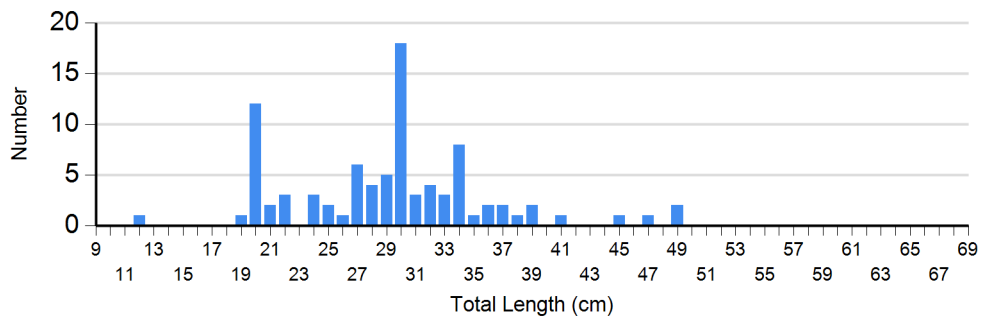
2013



2014

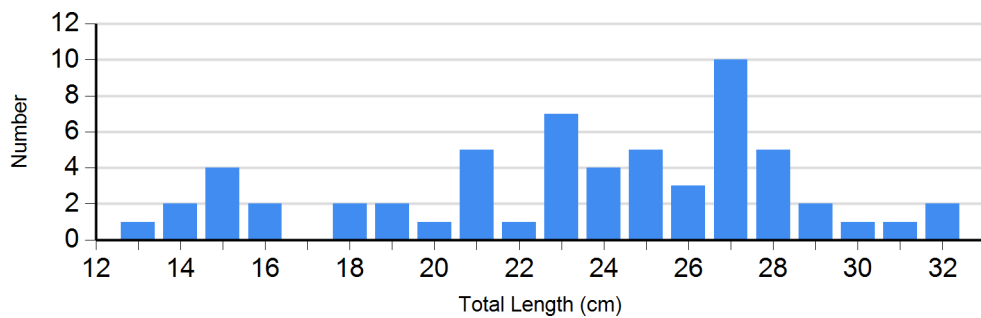


2015



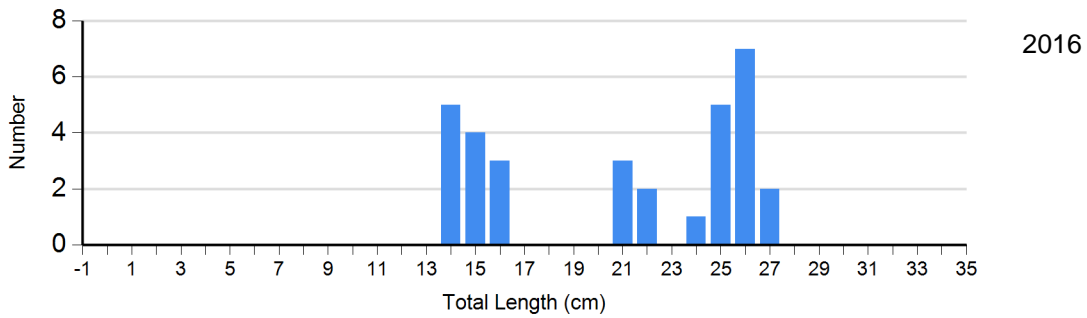
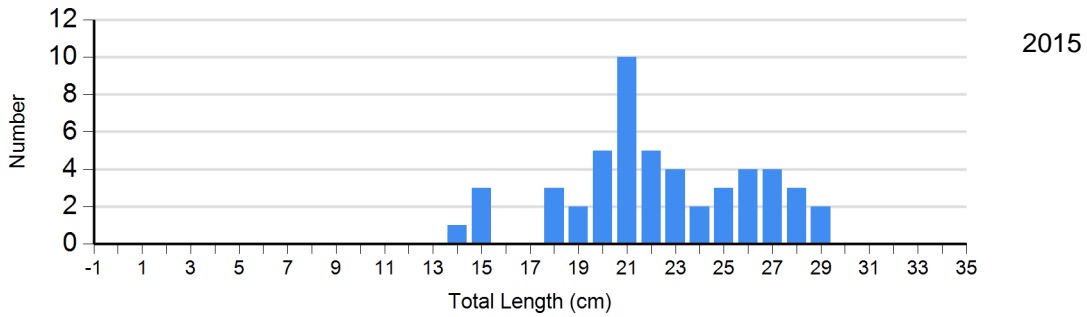
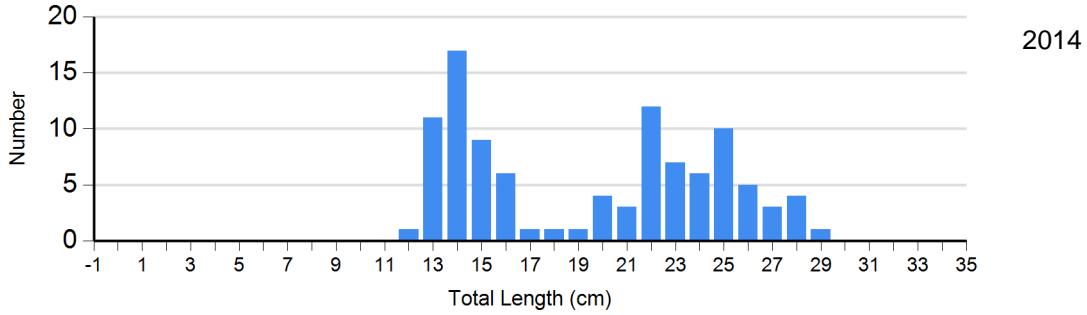
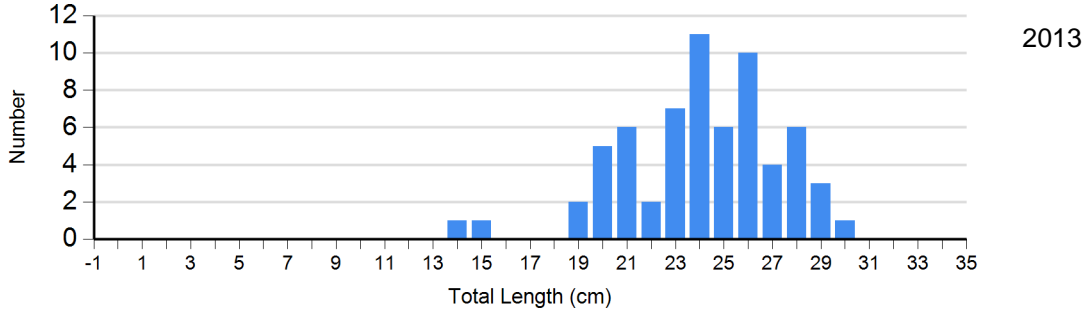
2016

Species: Yellow Perch
Gear: AFS std gill net



2017

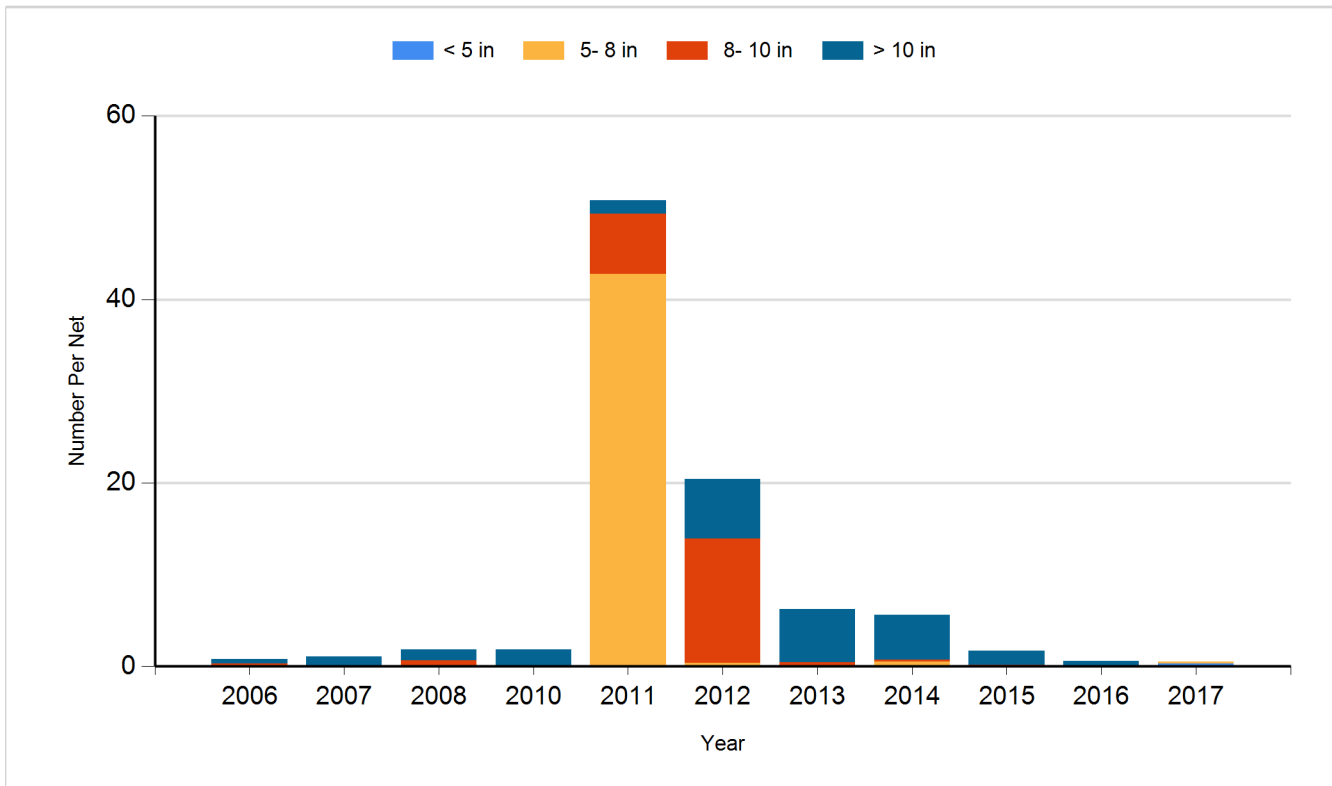
Species: Yellow Perch
Gear: std exp gill net



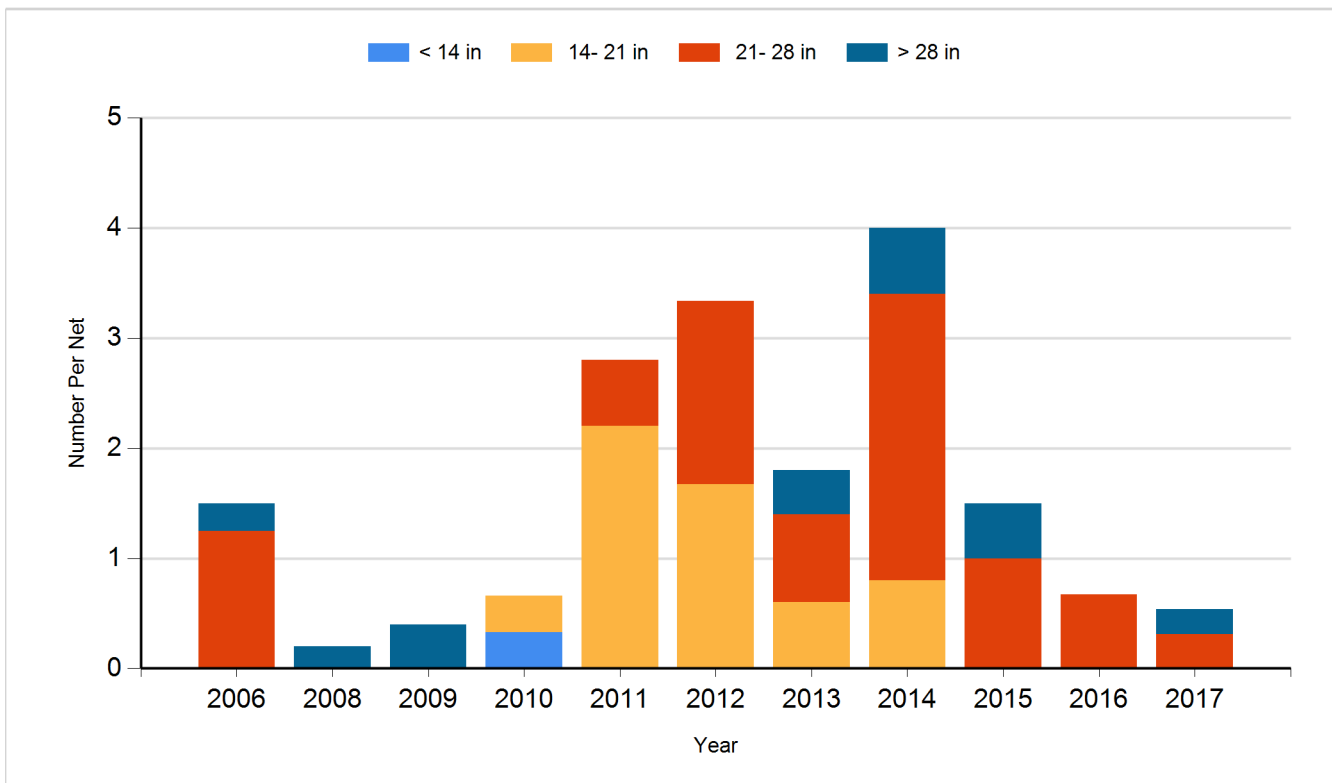
Historic Fish Sizes and Relative Abundance

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

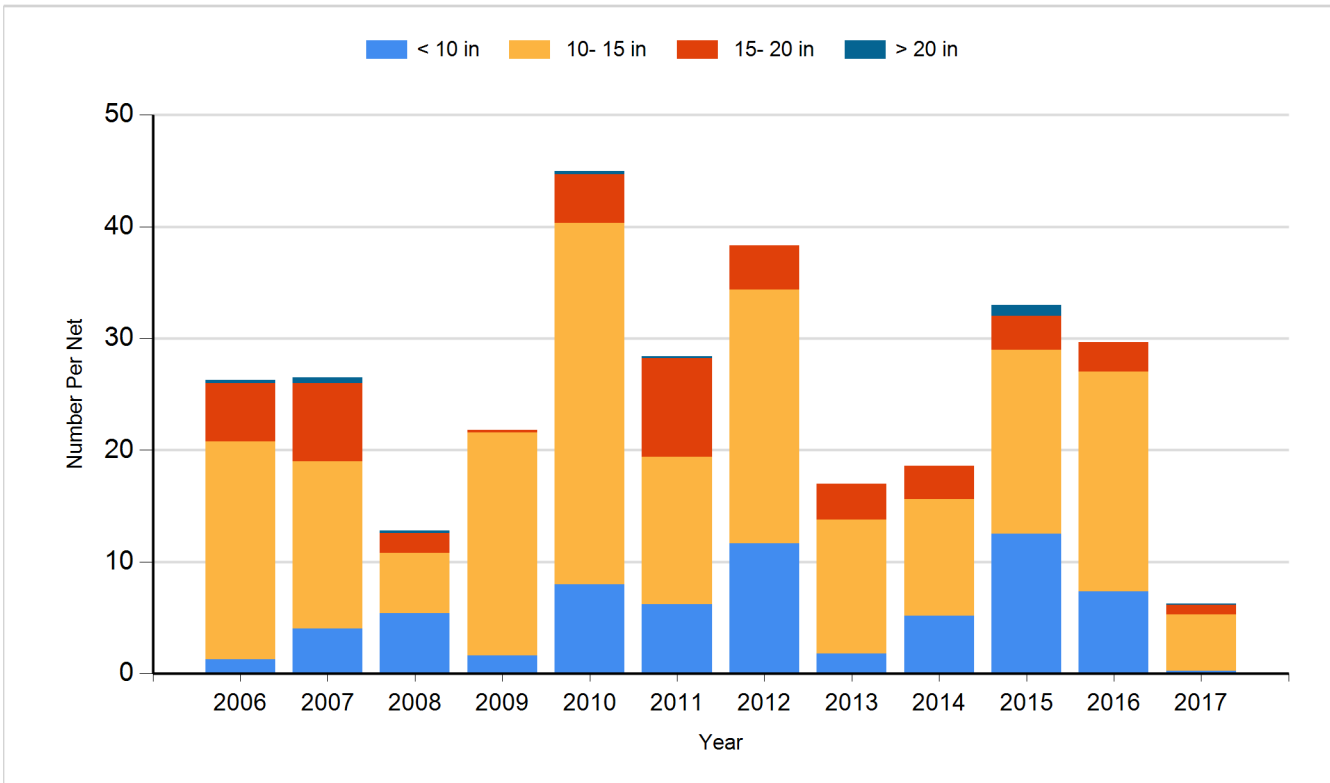
Species: Black Crappie
Gear: Frame Net



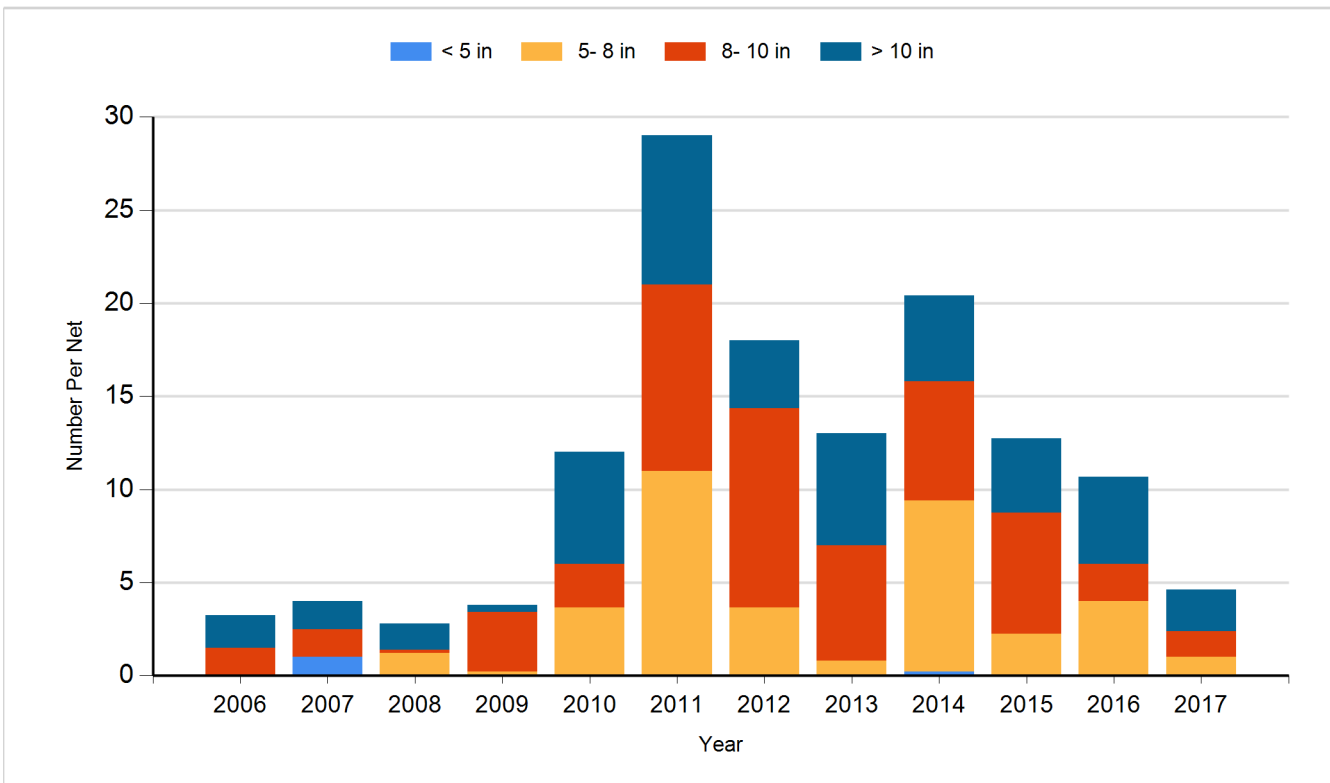
Species: Northern Pike
Gear: Gill Net



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
2006	Walleye	Fingerling	17,935
2006	Walleye	Fry	6,250,000
2011	Walleye	Fry	8,000,000
2014	Walleye	Fry	6,200,000
2015	Walleye	Fry	6,200,000