

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Kampeska, Codington County
UBS-Lake-171-000
2017

Lake Information

Name:	Kampeska	Maximum Depth:	16 Feet
County:	Codington	Mean Depth:	7 Feet
		OHWM Elevation:	1,718
Surface Area:	4,987 Acres	Outlet Elevation:	1,718

Surveys and Investigations

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

Gear	Date	Effort
AFS std frame net	July 18, 2017	6 net-nights
AFS std frame net	July 19, 2017	7 net-nights
AFS std frame net	July 20, 2017	7 net-nights
AFS std gill net	July 18, 2017	4 net-nights
AFS std gill net	July 19, 2017	4 net-nights
AFS std gill net	July 20, 2017	3 net-nights
boat shocker (night)	September 06, 2017	3300 seconds

Common Fish Species Present

Walleye

Smallmouth Bass

Black Crappie

White Crappie

Yellow Perch

White Bass

Yellow Bullhead

Channel Catfish

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	Bigmouth Buffalo	0.6	0.4	100		100				
	Black Bullhead	0.7	0.4	93		93		85	3	
	Black Crappie	1.2	0.5	65	16	17		104	2	
	Bluegill	0.5	0.2	89		78		126	4	
	Channel Catfish	0.1	0.1	100		100				
	Common Carp	0.1	0.1	100		100				
	Northern Pike	0.2	0.1	100		100				
	Smallmouth Bass	0.4	0.2	57		0		93	4	
	Walleye	0.1	0.1	0		0		76	1	
	White Bass	3.1	1.6	100		87	7	79	1	
	White Crappie	0.1	0.1	100		100		82	4	
	Yellow Bullhead	1.6	0.4	100		100		98	2	
	Yellow Perch	0.1	0.1	100		0		86		
	AFS std gill net	Black Bullhead	0.4	0.4	100		100		91	2
Black Crappie		0.1	0.1	100		100		73		
Bluegill		0.1	0.1	100		100		104		
Channel Catfish		0.9	0.3	100		70		100	3	
Northern Pike		0.2	0.2	50		0		68	0	
Smallmouth Bass		1.3	0.7	57	22	21		90	2	
Walleye		2.7	0.6	7		3		75	1	
White Bass		1.5	0.8	94		50	21	80	2	
White Crappie		0.5	0.2	100		100		91	6	
White Sucker		0.6	0.4	100		100		105	4	
Yellow Bullhead		0.7	0.4	100		100		100	4	
Yellow Perch		5.3	1.8	97		48	10	109	1	
boat shocker (night)		Walleye	41.0	24.4	0		0		90	1

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	Bigmouth Buffalo										0.6	0.6
	Black Bullhead										0.7	0.7
	Black Crappie										1.2	1.2
	Bluegill										0.5	0.5
	Channel Catfish										0.1	0.1
	Common Carp										0.1	0.1
	Northern Pike										0.2	0.2
	Smallmouth Bass										0.4	0.4
	Walleye										0.1	0.1
	White Bass										3.1	3.1
	White Crappie										0.1	0.1
	Yellow Bullhead										1.6	1.6
Yellow Perch										0.1	0.1	
AFS std gill net	Black Bullhead									0.4	0.4	0.4
	Black Crappie										0.1	0.1
	Bluegill										0.1	0.1
	Channel Catfish									1.0	0.9	1.0
	Common Carp									0.1		0.1
	Northern Pike									0.5	0.2	0.4
	Shorthead Redhorse									0.2		0.2
	Smallmouth Bass									0.8	1.3	1.1
	Walleye									4.6	2.7	3.7
	White Bass									1.8	1.5	1.7
	White Crappie									1.1	0.5	0.8
	White Sucker									0.6	0.6	0.6
Yellow Bullhead									1.1	0.7	0.9	
Yellow Perch									5.3	5.3	5.3	
boat shocker (night)	Smallmouth Bass	97.7		71.0		101.5		114.0		106.5		98.1
	Walleye	20.6			342.0	0.5	110.0	59.7	7.0	2.3	41.0	72.9
frame net (std 3/4 in)	Bigmouth Buffalo	1.6	0.2	1.7	0.3	0.2	0.2	0.4				0.7
	Black Bullhead	0.4	2.4	0.0	0.1	18.2	22.7	15.5				8.5
	Black Crappie	2.8	0.4	1.2	0.5	1.2	0.6	0.5				1.0
	Bluegill	4.0	1.3	3.2	1.5	1.2	1.6	1.4				2.0

Gear	Species	CPUE										Avg	
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		
frame net (std 3/4 in)	Channel Catfish	0.0			0.2	0.1	0.2						0.1
	Common Carp	0.3	0.2	0.0	0.1		0.1	0.1					0.1
	Northern Pike	0.3	0.5	1.0	0.5	1.3	0.4	0.2					0.6
	Rock Bass	0.0	0.2	0.1	0.2	0.1	0.0						0.1
	Shorthead Redhorse			0.0	0.1	0.1							0.1
	Smallmouth Bass	2.7	0.6	2.6	1.6	4.0	1.1	0.5					1.9
	Stonecat			0.0									0.0
	Walleye	2.2	1.1	3.4	0.5	0.5	1.0	0.6					1.3
	White Bass	4.3	10.2	7.9	3.0	8.5	7.2	3.0					6.3
	White Crappie	0.2	0.1	0.2	1.5	0.3	0.2	0.7					0.5
	White Sucker	1.3	1.2	1.6	1.0	0.8	0.5	0.5					1.0
	Yellow Bullhead	1.4	0.2	5.2	2.7	21.6	15.4	3.9					7.2
	Yellow Perch			0.4	0.1	2.9		0.1					0.9
std exp gill net	Bigmouth Buffalo	0.2											0.2
	Black Bullhead	0.2		0.1		3.2	8.0	1.8	2.3				2.6
	Channel Catfish	0.3		0.1	0.1		0.2	0.7	0.2				0.3
	Common Carp	0.5	0.2	0.1		0.2	0.2	0.3					0.3
	Northern Pike	0.5	0.3	0.1	0.4	2.5	2.5	0.2	1.0				0.9
	Shorthead Redhorse		0.1	0.1	0.1	0.2			0.3				0.2
	Smallmouth Bass	0.2			0.2	0.2	0.5		1.2				0.5
	Walleye	14.3	5.7	6.9	8.1	12.2	7.5	9.3	11.5				9.4
	White Bass	15.5	2.4	1.8	1.5	4.8	4.3	3.8	4.7				4.9
	White Crappie	0.5	0.1	0.3	1.1	3.2	2.5	1.3	0.3				1.2
	White Sucker	0.3	0.6	0.6	1.8	3.8	1.5	1.8	2.2				1.6
	Yellow Bullhead	0.2		0.2	0.3	6.7	2.2	1.5	0.8				1.7
	Yellow Perch	0.3	0.7	2.0	0.9	3.5	5.7	2.7	13.0				3.6

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											65
		PSD-P											17
		Wr											104
	Northern Pike	PSD											100
		PSD-P											100
	Walleye	PSD											0
		PSD-P											0
		Wr											76
	Yellow Perch	PSD											100
PSD-P												0	
Wr												86	
AFS std gill net	Black Crappie	PSD											100
		PSD-P											100
		Wr											73
	Northern Pike	PSD										83	50
		PSD-P										17	0
		Wr										86	68
	Walleye	PSD										18	7
		PSD-P										2	3
		Wr										79	75
	Yellow Perch	PSD										90	97
		PSD-P										40	48
		Wr										108	109
boat shocker (night)	Walleye	PSD	0			0	0	0	0	0	0	0	0
		PSD-P	0			0	0	0	0	0	0	0	0
		Wr	100			87	74	93	89	91	92	90	
frame net (std 3/4 in)	Black Crappie	PSD	100	100	84	100	79	83	91				
		PSD-P	36	100	44	67	50	17	55				
		Wr	100	93	101	97	101	104	100				
	Northern Pike	PSD	100	78	100	67	40	75	60				
		PSD-P	67	33	55	56	0	25	40				

Gear	Species	Index	Year									
			2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
frame net (std 3/4 in)	Northern Pike	Wr	76	80	85	81	66	74	56			
		PSD	6	14	11	11	20	36	17			
		PSD-P	6	0	4	0	0	0	0			
	Yellow Perch	Wr	78	83	81	99	76	80	76			
		PSD			89	50	93		100			
		PSD-P			56	0	53		50			
		Wr			99	95			97			
std exp gill net	Northern Pike	PSD	100	67	100	75	27	60	100	17		
		PSD-P	0	17	0	0	0	7	0	0		
		Wr	77	79	81	82	71	79	70	83		
	Walleye	PSD	5	4	2	31	53	51	25	12		
		PSD-P	0	1	1	0	0	0	0	1		
		Wr	80	83	86	84	80	82	78	82		
	Yellow Perch	PSD	50	31	75	38	81	65	88	65		
		PSD-P	50	8	14	13	19	18	19	41		
		Wr	106	112	107	104	95	107	107	109		

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+
2017	30			276 (12)	313 (10)		359 (7)			659 (1)	
2016	58	205 (1)	260 (14)	305 (19)		365 (20)		480 (1)	608 (1)	404 (1)	432 (1)
2015	88	198 (17)	264 (35)		334 (29)	351 (2)	555 (1)	432 (2)	422 (1)	414 (1)	
2014	62	193 (5)	223 (1)	305 (39)	353 (4)	382 (2)	418 (7)	427 (3)		457 (1)	
2013	59		248 (24)	369 (11)	401 (13)	409 (4)	447 (4)		423 (1)		414 (2)
2012	75	205 (2)	316 (11)	369 (12)	394 (25)	388 (12)	394 (2)	406 (8)		473 (1)	498 (1)
2011	150	250 (11)	325 (28)	359 (50)	384 (13)	425 (1)	392 (43)	432 (1)			498 (1)
2010	134	209 (7)	281 (56)	314 (37)	320 (3)	353 (29)				345 (2)	520 (1)
2009	138	195 (35)	276 (34)	306 (1)	327 (64)	404 (1)	456 (1)		519 (2)		
2008	94	191 (8)	263 (11)	286 (70)				406 (4)	412 (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+
2017	58	138 (1)	215 (22)	237 (4)	264 (22)	303 (5)	289 (3)	256 (1)			
2016	63	142 (3)	187 (3)	234 (31)		274 (11)	277 (11)	279 (3)	255 (1)		
2015	78		191 (33)	242 (7)	253 (22)	261 (7)	270 (9)	296 (1)			
2014	22	119 (5)	160 (2)	219 (7)	235 (1)	255 (6)	235 (1)				
2013	35	123 (1)	183 (13)	230 (12)	244 (9)		252 (1)				
2012	21		180 (2)	211 (11)	241 (6)	251 (1)	273 (1)				
2011	27	106 (11)	182 (9)	197 (5)	254 (2)						
2010	39	113 (3)	178 (9)	231 (22)	257 (1)	293 (1)	293 (1)		215 (1)	282 (1)	
2009	13		184 (10)	220 (1)		230 (1)				278 (1)	
2008	1		189 (1)								

Fish Condition

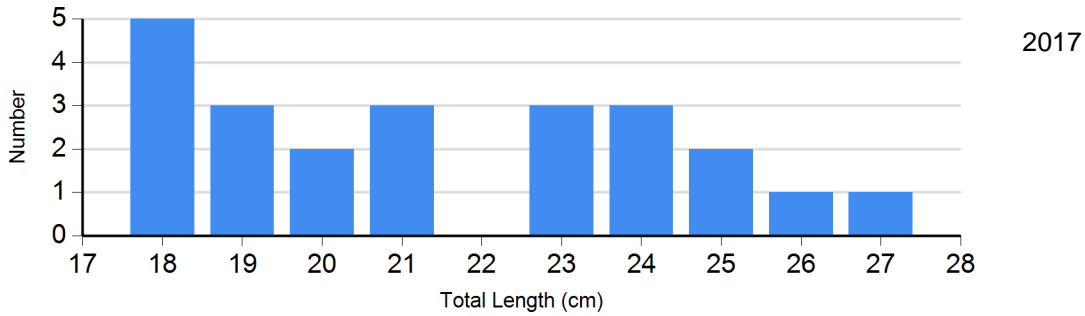
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

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	2	120	8	102 (2.4)	2	102 (8.8)	0	
	2014	1	115	4	96 (4.0)	5	100 (4.8)	1	101
	2017	8	107 (2.7)	11	104 (1.4)	4	98 (4.1)	0	
Northern Pike Gill Net	2013	6	82 (2.8)	8	77 (3.0)	1	73	0	
	2014	0		1	70	0		0	
	2015	5	84 (3.1)	1	78	0		0	
	2016	1	112	4	77 (3.8)	0		1	98
	2017	1	68	1	68	0		0	
Walleye Gill Net	2013	22	83 (1.2)	23	81 (0.7)	0		0	
	2014	42	78 (0.6)	14	76 (1.3)	0		0	
	2015	61	83 (0.6)	7	78 (1.1)	1	88	0	
	2016	45	78 (0.6)	9	81 (1.6)	1	80	0	
	2017	28	75 (1.0)	1	74	0		1	85
Yellow Perch Gill Net	2013	12	105 (1.9)	16	111 (2.2)	6	102 (2.7)	0	
	2014	2	105 (8.8)	11	108 (2.4)	3	102 (7.5)	0	
	2015	27	111 (1.5)	19	106 (1.5)	32	109 (1.5)	0	
	2016	6	107 (3.1)	32	110 (1.2)	25	105 (1.4)	0	
	2017	2	108 (2.4)	28	107 (1.5)	24	111 (1.6)	4	104 (1.7)

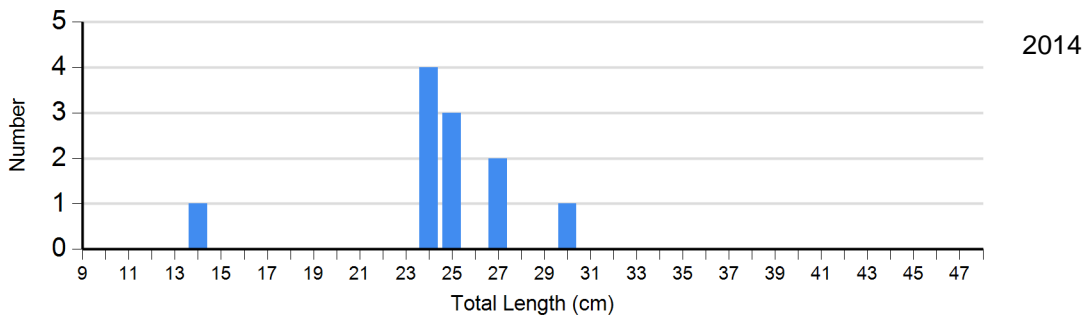
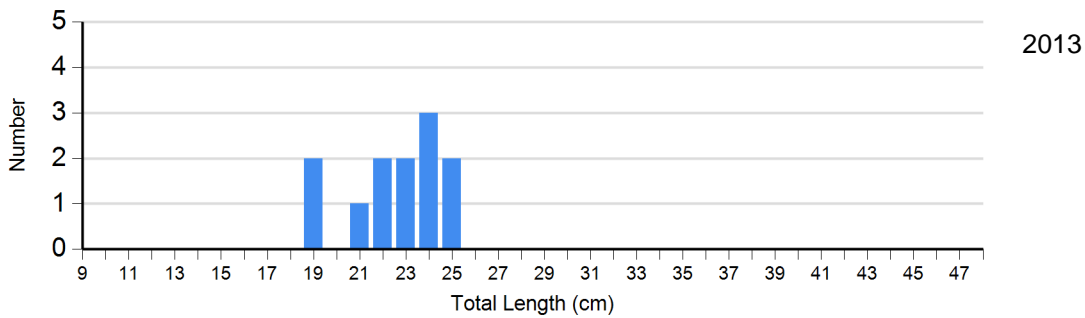
Length Frequency Distribution

Length frequency histogram of species sampled by year.

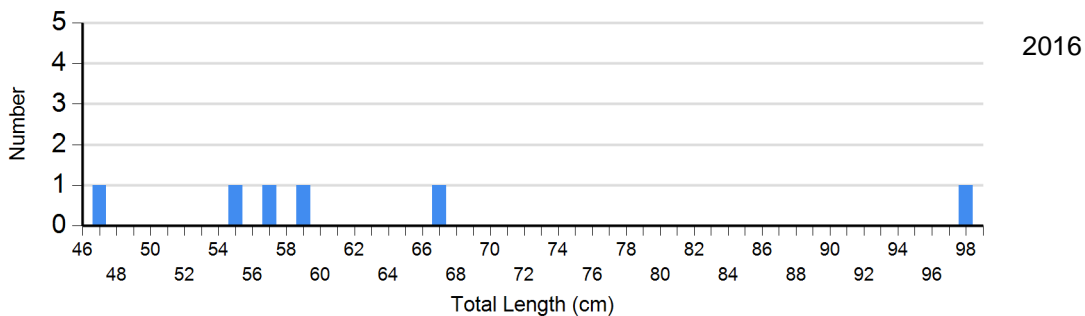
Species: Black Crappie
Gear: AFS std frame net

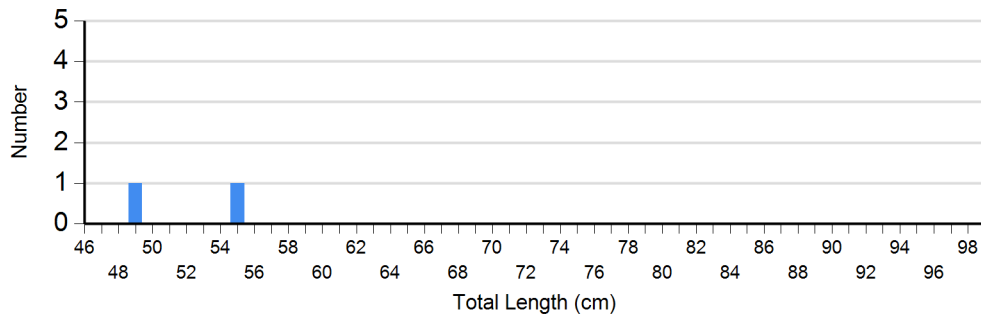


Species: Black Crappie
Gear: frame net (std 3/4 in)



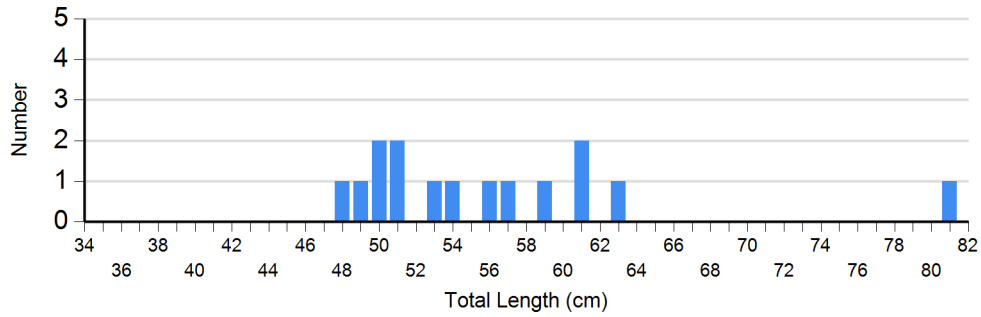
Species: Northern Pike
Gear: AFS std gill net



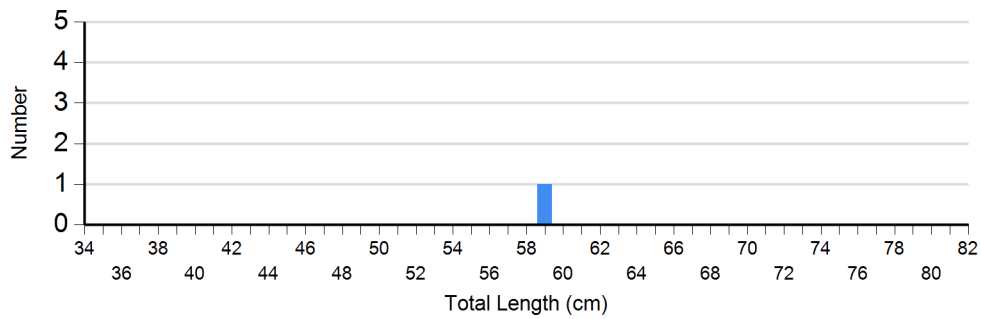


2017

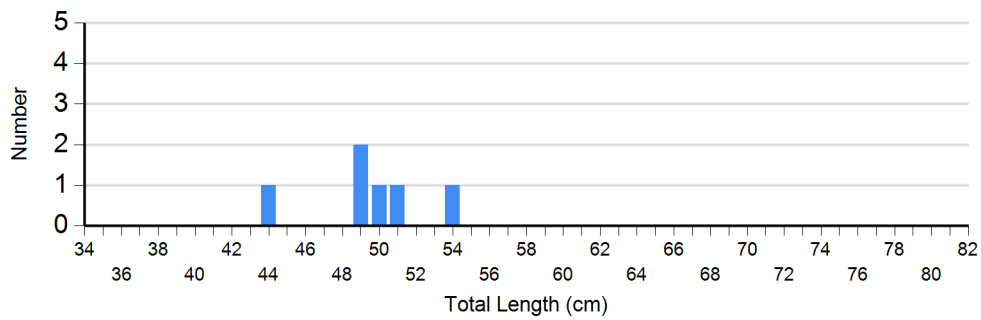
Species: Northern Pike
Gear: std exp gill net



2013

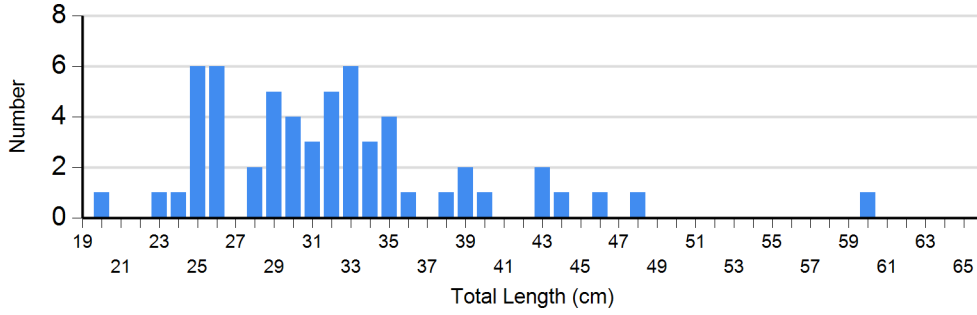


2014

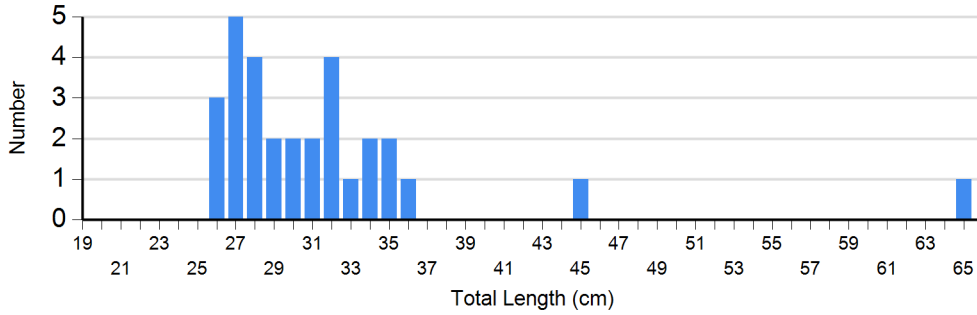


2015

Species: Walleye
 Gear: AFS std gill net

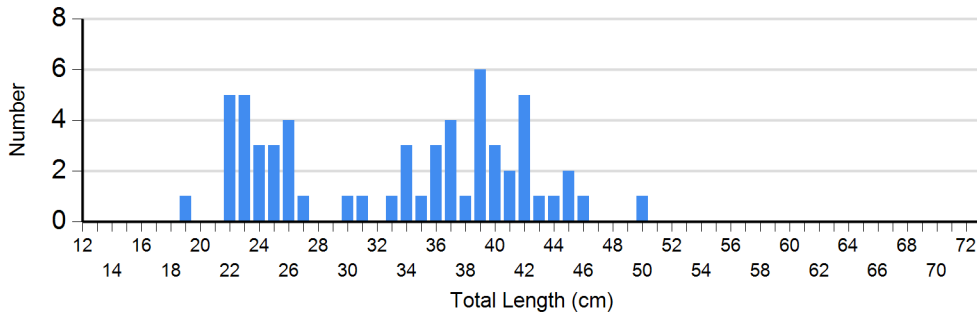


2016

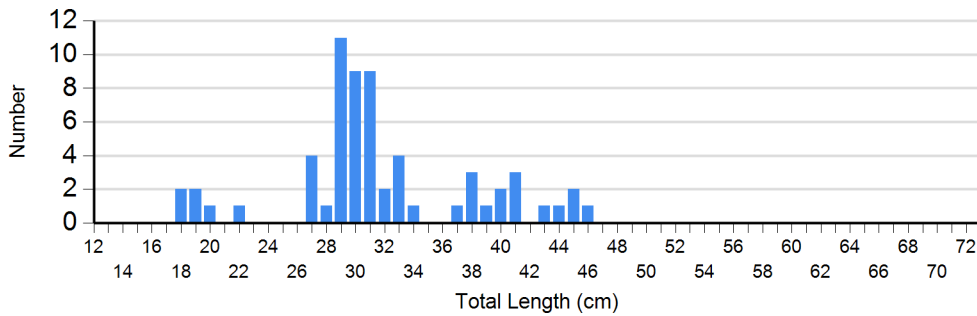


2017

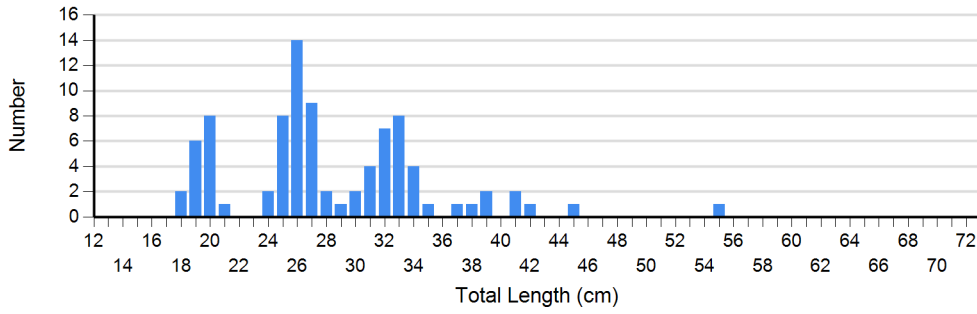
Species: Walleye
 Gear: std exp gill net



2013

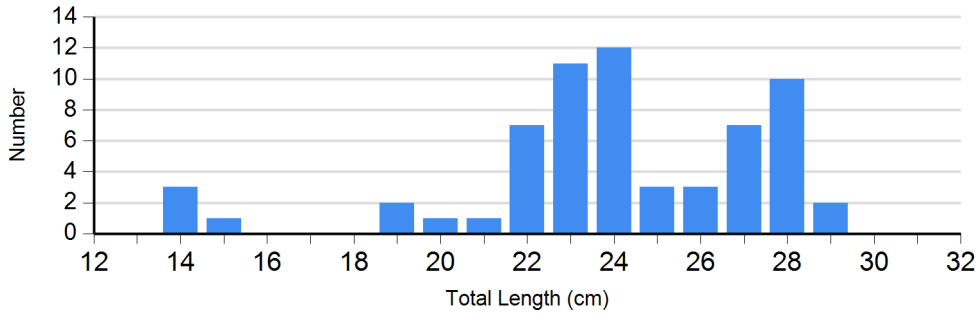


2014

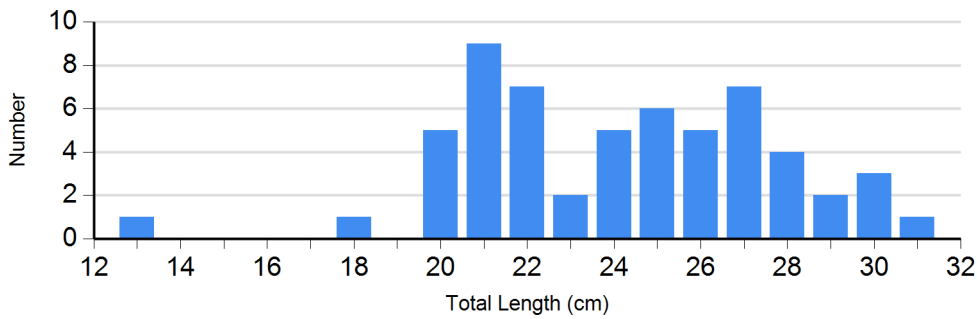


2015

Species: Yellow Perch
Gear: AFS std gill net

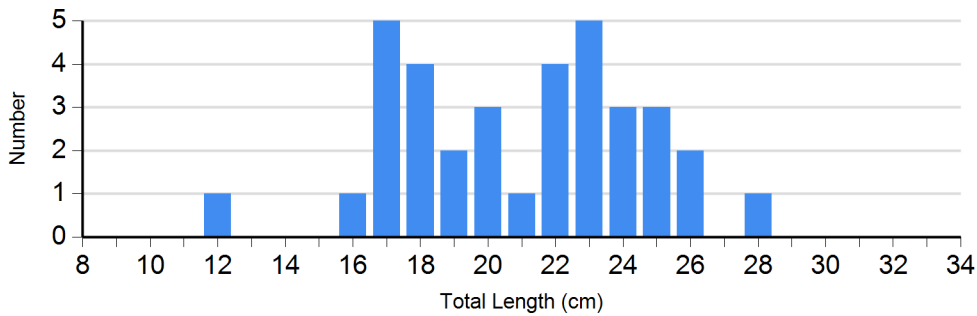


2016

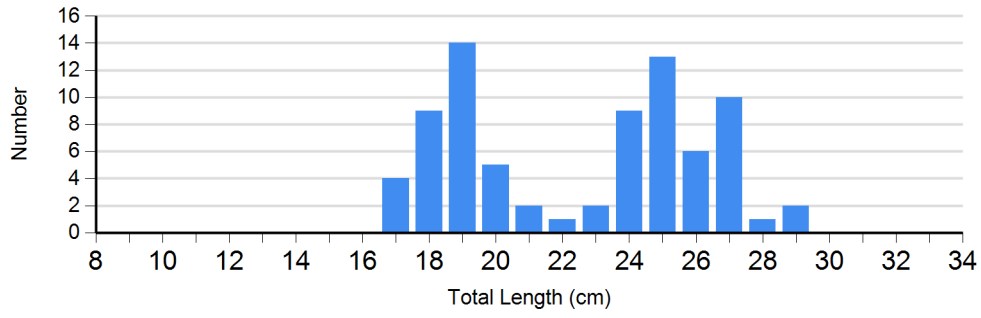
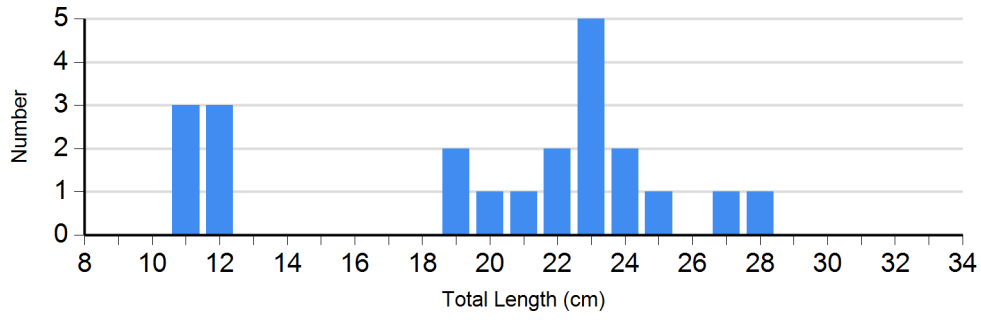


2017

Species: Yellow Perch
Gear: std exp gill net



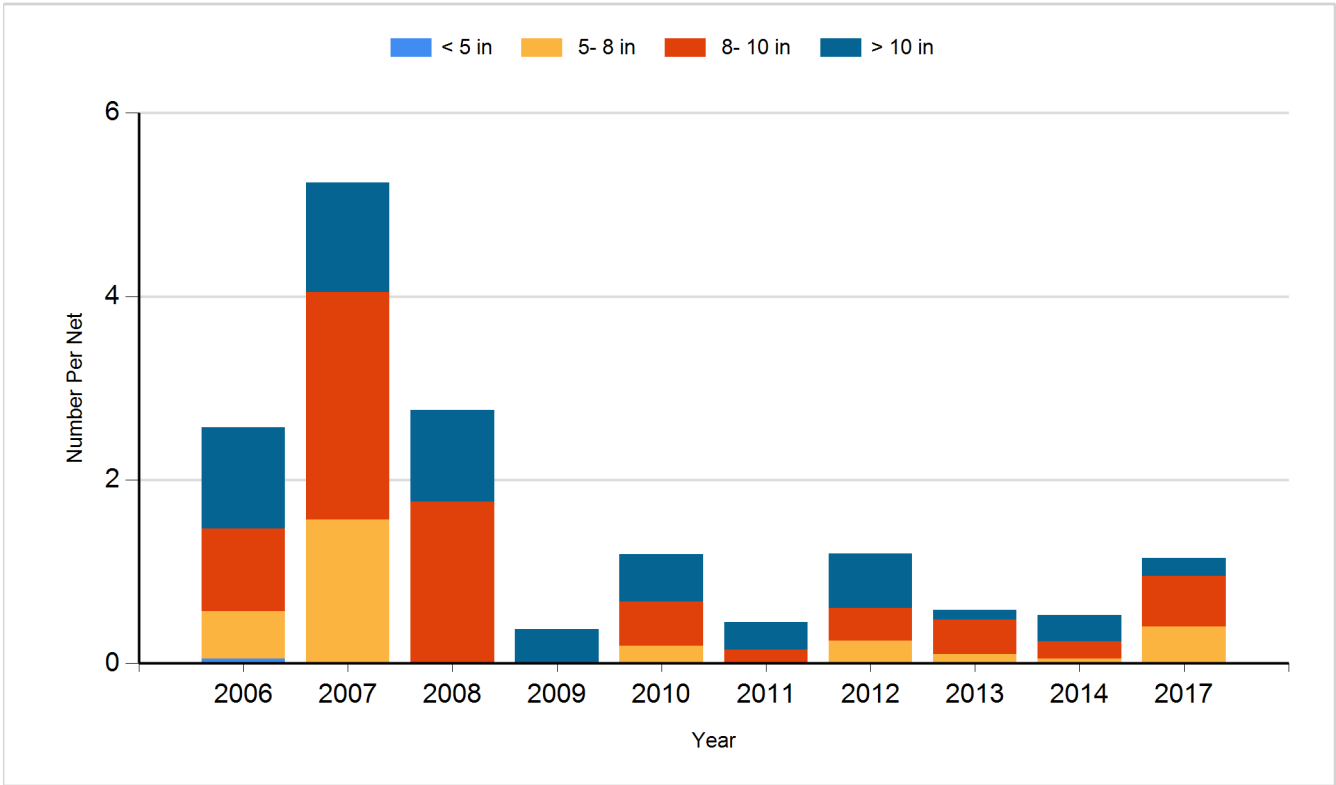
2013



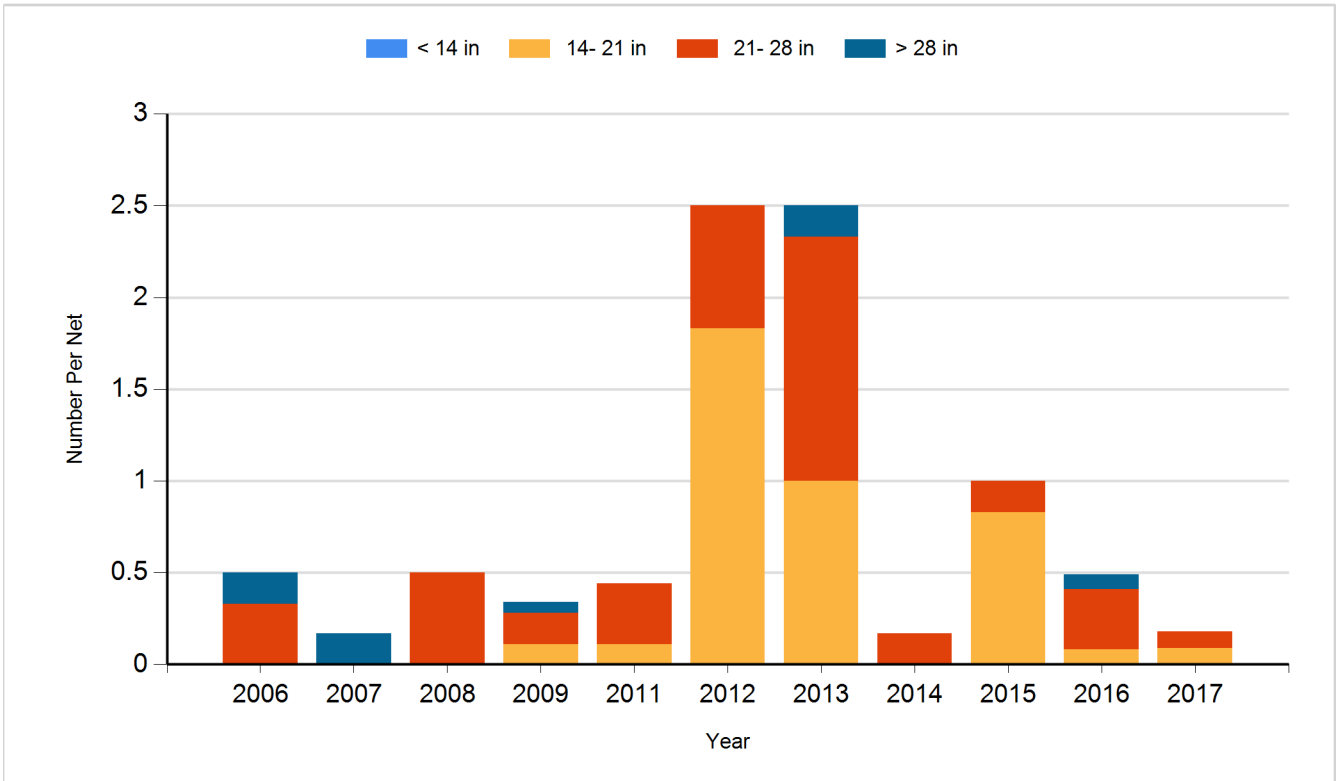
Historic Fish Sizes and Relative Abundance

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

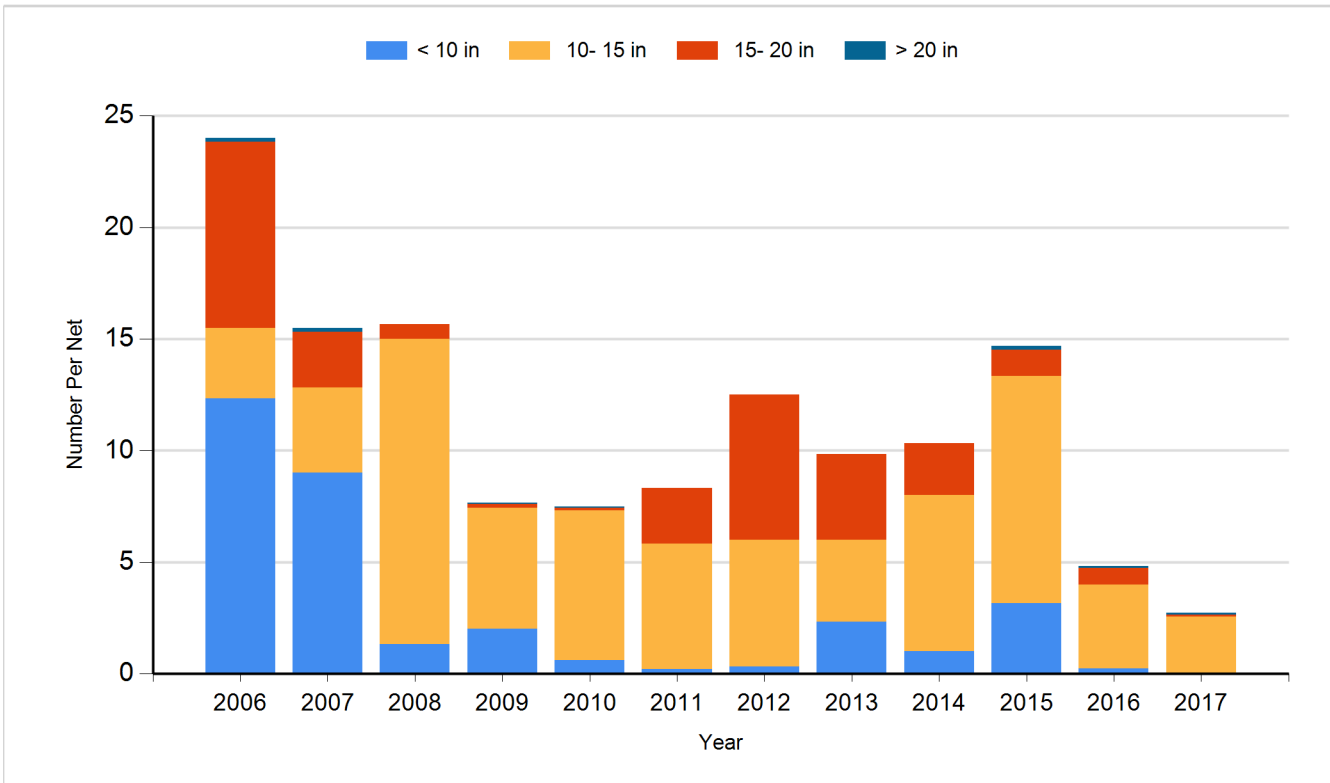
Species: Black Crappie
Gear: Frame Net



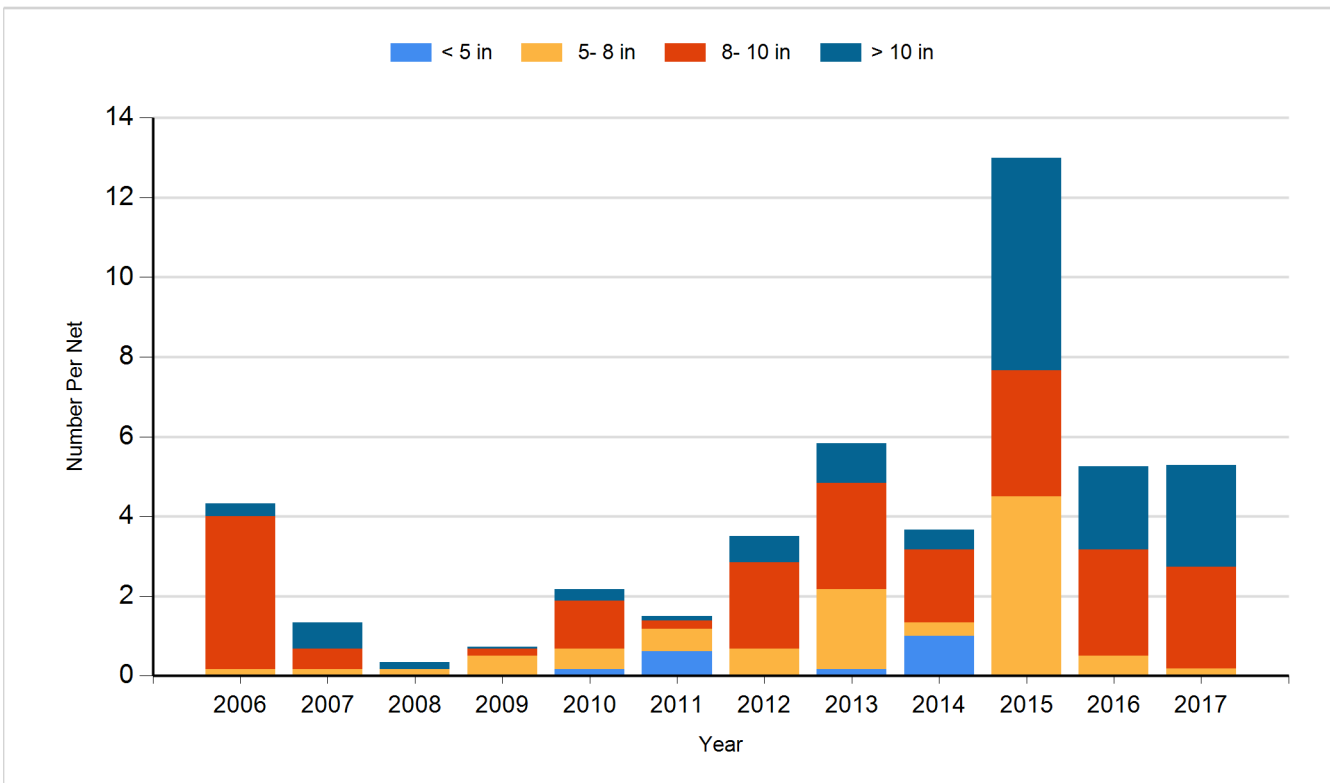
Species: Northern Pike
Gear: Gill Net



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
2008	Walleye	Fry	2,500,000
2009	Walleye	Fry	2,500,000
2013	Walleye	Fry	2,400,000
2014	Walleye	Fry	2,500,000
2016	Walleye	Fry	2,400,000
2017	Walleye	Fry	2,400,000