SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Mina, Edmunds County
SNK-Lake-23-800
2017

Lake Information

Name: Mina

County: Edmunds

Surface Area: 741 Acres

Maximum Depth: 27 Feet

Mean Depth: 9 Feet

Surveys and Investigations

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

Gear	Date	Effort
AFS std frame net	August 01, 2017	6 net-nights
AFS std frame net	August 02, 2017	6 net-nights
AFS std frame net	August 03, 2017	6 net-nights
AFS std gill net	August 01, 2017	4 net-nights
AFS std gill net	August 02, 2017	4 net-nights
AFS std gill net	August 03, 2017	4 net-nights
boat shocker (night)	September 26, 2017	2400 seconds

Common Fish Species Present

Walleye

Channel Catfish

Bluegill

Black Crappie

Black Bullhead

Yellow Perch

Freshwater Drum

White Sucker

Northern Pike

Common Carp

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	15.3	3.6	100		24	4	95	1
	Black Crappie	0.3	0.3	100		0		109	2
	Bluegill	14.1	3.2	85	3	8	2	125	1
	Channel Catfish	1.2	0.7	59	17	18		99	3
	Common Carp	0.2	0.1	100		33		91	3
	Freshwater Drum	0.1	0.1	100		50		76	14
	Largemouth Bass	0.0	0.0	0		0			
	Northern Pike	0.6	0.2	18		0		74	3
	Walleye	0.2	0.1	100		50		79	4
	White Sucker	0.4	0.2	100		100		84	6
	Yellow Perch	1.1	0.5	95		55	18	96	2
AFS std gill net	Black Bullhead	9.3	2.5	100		35	6	103	1
	Bluegill	0.6	0.5	57		14		124	4
	Channel Catfish	2.2	0.9	54	15	15		109	4
	Common Carp	0.3	0.3	100		100		91	5
	Freshwater Drum	2.6	1.1	100		19	11	92	1
	Northern Pike	1.0	0.4	50	25	8		81	3
	Walleye	0.4	0.3	100		0		82	4
	White Sucker	1.2	0.4	100		100		95	2
	Yellow Perch	7.1	2.1	91	5	22	7	104	1
boat shocker (night)	Walleye	133.5	14.1	0		0		89	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.

		CPUE										
Gear	Species	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Avg
AFS std frame net	Black Bullhead										15.3	15.3
	Black Crappie										0.3	0.3
	Bluegill										14.1	14.1
	Channel Catfish										1.2	1.2
	Common Carp										0.2	0.2
	Freshwater Drum										0.1	0.1
	Largemouth Bass										0.0	0.0
	Northern Pike										0.6	0.6
	Walleye										0.2	0.2
	White Sucker										0.4	0.4
	Yellow Perch										1.1	1.1
AFS std gill net	Black Bullhead									16.8	9.3	13.1
	Bluegill									0.3	0.6	0.5
	Channel Catfish									3.3	2.2	2.8
	Common Carp									0.5	0.3	0.4
	Freshwater Drum									6.9	2.6	4.8
	Largemouth Bass									0.1		0.1
	Northern Pike									0.3	1.0	0.7
	Walleye									1.6	0.4	1.0
	White Sucker									0.7	1.2	1.0
	Yellow Perch									16.7	7.1	11.9
boat shocker (night)	Walleye		54.9	14.4	32.0			7.0	69.0	77.6	133.5	55.5
frame net (std 3/4 in)	Black Bullhead	5.8	0.9	8.9	8.1	85.5	35.2	31.1	41.8			27.2
	Black Crappie	2.5	3.2	1.1	16.7	31.3	0.2	0.1	0.1			6.9
	Bluegill	1.8	0.6	1.8	3.9	5.6	6.7	16.5	5.7			5.3
	Bluegill X Gr. Sunfish Hybrid								0.1			0.1
	Channel Catfish	2.4	3.6	4.2	5.7	1.2	0.6	1.4	0.7			2.5
	Common Carp	1.9	2.1	1.0	1.1	0.5	0.2	0.6	0.6			1.0
	Freshwater Drum	2.3	2.1	1.1	1.0		0.4	0.3	0.9			1.2
	Northern Pike	3.2	2.2	2.4	1.1	2.0	0.9	0.8	0.4			1.6
	O. Spotted X Gr. Sunfish Hybrid							0.0				0.0
	Orangespotted Sunfish			0.0								0.0

		CPUE									
Gear	Species	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Avg
frame net (std 3/4 in)	Rock Bass	0.1										0.1
	Shortnose Gar	0.0										0.0
	Sunfish Hybrid		0.0					0.0				0.0
	Walleye	0.3	0.3	0.3	0.5	0.7	0.1	0.3	0.1			0.3
	White Bass	0.1										0.1
	White Sucker	0.3	0.3	0.3	0.1	0.1	0.5	0.3	0.3			0.3
	Yellow Perch	1.7	1.9	1.0	1.4	2.1	1.2	9.6	1.6			2.6
std exp gill net	Black Bullhead	8.2	4.1	10.7	7.5	44.7	17.0	24.5	23.5			17.5
	Black Crappie			0.5	1.5	1.0			0.0			0.8
	Bluegill						0.7	0.2				0.5
	Channel Catfish	1.7	0.6	0.8	1.7	1.0	3.2	1.0	2.7			1.6
	Common Carp	8.7	0.4	0.2	0.2	1.2	0.2	0.5	1.2			1.6
	Freshwater Drum	19.0	4.3	6.0	7.2	3.3	7.3	5.5	2.3			6.9
	Largemouth Bass					0.2						0.2
	Northern Pike	3.5	0.5	3.3	0.3	1.3	0.7	0.5	2.3			1.6
	Orangespotted Sunfish	0.0	0.0					0.0				0.0
	Walleye	1.0	0.1	0.7	1.8	1.2	3.5	0.7	1.7			1.3
	White Sucker				0.2	0.2		0.2	0.2			0.2
	Yellow Perch	1.7	1.4	6.0	8.3	14.8	8.7	27.2	32.5			12.6

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.

			Year									
Gear	Species	Index	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
AFS std frame net	Black Crappie	PSD										100
		PSD-P										0
		Wr										109
	Northern Pike	PSD										18
		PSD-P										0
		Wr										74
	Walleye	PSD										100
		PSD-P										50
		Wr										79
	Yellow Perch	PSD										95
		PSD-P										55
		Wr										96
AFS std gill net	Northern Pike	PSD									25	50
		PSD-P									0	8
		Wr									83	81
	Walleye	PSD									74	100
		PSD-P									16	0
		Wr									97	82
	Yellow Perch	PSD									86	91
		PSD-P									36	22
		Wr									102	104
boat shocker (night)	Walleye	PSD		0	0	0			0	0	0	0
		PSD-P		0	0	0			0	0	0	0
		Wr		103	85	84			101	92	98	89
frame net (std 3/4 in)	Black Crappie	PSD	58	100	20	58	90	100	100	0		
		PSD-P	44	26	15	4	15	100	100	0		
		Wr	119	118	119	113	112		116	117		
	Northern Pike	PSD	18	69	60	84	56	50	67	75		
		PSD-P	11	8	7	5	15	6	25	50		
		Wr	89	87	79	77	81	73	86	70		
	Walleye	PSD	100	60	80	0	25	0	80	0		

			Year									
Gear	Species	Index	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
frame net (std 3/4 in)	Walleye	PSD-P	40	40	60	0	0	0	40	0		
		Wr	105	94	85	89	79	76	102			
	Yellow Perch	PSD	20	83	44	67	86	82	13	97		
		PSD-P	20	3	11	4	8	5	8	0		
		Wr	91	92	93	95	96	96	97	93		
std exp gill net	Black Crappie	PSD			0	11	50			0		
		PSD-P			0	0	0			0		
		Wr			113	119	115					
	Northern Pike	PSD	0	44	90	50	75	75	100	57		
		PSD-P	0	0	5	0	13	0	33	7		
		Wr	93	91	76	76	76	77	89	84		
	Walleye	PSD	83	100	0	0	29	62	100	60		
		PSD-P	33	0	0	0	0	5	25	20		
		Wr	107	115	82	86	84	91	104	96		
	Yellow Perch	PSD	30	38	44	40	81	81	43	92		
		PSD-P	30	0	11	14	10	12	20	15		
		Wr	97	95	99	101	106	106	104	99		

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+
2017	8	54 (3)	200 (1)	227 (4)							
2012	532	160 (52)	225 (364)	250 (106)	257 (10)						
2011	284	161 (116)	215 (156)	263 (7)	287 (5)						
2010	20	145 (16)	215 (1)	279 (2)	282 (1)						
2009	56		231 (44)		294 (12)						
2008	44	167 (18)	205 (1)	259 (24)	295 (1)						

Species: Walleye

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2017	6	201 (1)		418 (2)	436 (2)				492 (1)		
2016	19	267 (2)	393 (11)				551 (1)	533 (3)			404 (2)
2015	10	290 (4)	386 (2)		470 (2)		562 (1)	599 (1)			
2014	4				431 (1)	472 (3)					
2013	21		317 (5)	389 (4)	411 (11)		513 (1)				
2012	7			357 (7)							
2011	11		303 (11)								
2010	43	224 (43)									
2009	1				489 (1)						
2008	6		364 (1)				501 (2)	493 (2)	551 (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	85	162 (7)	213 (33)	242 (12)	249 (30)	287 (3)					
2016	200	159 (24)	223 (23)	244 (152)	282 (1)						

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2015	195	159 (2)	221 (154)	249 (19)	270 (19)	302 (1)					
2014	163	164 (91)	225 (19)	248 (37)	258 (5)	267 (12)					
2013	52	159 (5)	213 (30)	220 (7)	247 (10)						
2012	89	152 (8)	203 (17)	227 (55)	264 (2)	244 (7)					
2009	26		196 (24)	233 (1)		233 (1)					

Fish Condition

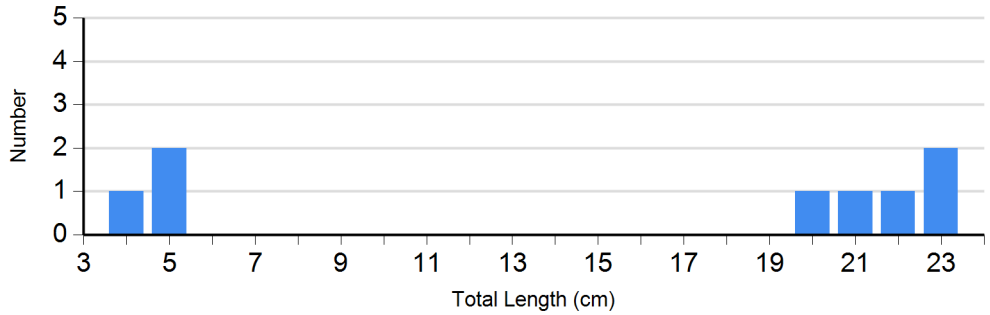
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	0		0		1	111	1	122
	2015	1	117	0		0		0	
	2017	0		5	109 (1.3)	0		0	
Northern Pike Gill Net	2013	1	86	3	74 (9.4)	0		0	
	2014	0		2	87 (4.8)	1	94	0	
	2015	6	82 (3.5)	7	86 (4.1)	1	88	0	
	2016	3	86 (6.0)	1	74	0		0	
	2017	6	81 (2.3)	5	79 (3.5)	1	91	0	
Walleye Gill Net	2013	8	94 (2.7)	12	90 (1.4)	1	83	0	
	2014	0		3	107 (2.8)	1	96	0	
	2015	4	97 (3.0)	4	94 (3.0)	2	99 (5.9)	0	
	2016	5	96 (2.3)	11	100 (2.7)	3	89 (3.7)	0	
	2017	0		5	82 (3.0)	0		0	
Yellow Perch Gill Net	2013	10	111 (3.3)	36	105 (1.3)	6	105 (3.1)	0	
	2014	93	106 (0.9)	38	103 (1.1)	32	99 (1.0)	0	
	2015	16	104 (1.8)	149	99 (0.6)	28	96 (1.2)	2	93 (5.7)
	2016	28	109 (2.0)	101	104 (1.1)	71	97 (1.1)	0	
	2017	8	106 (1.6)	58	107 (0.9)	19	95 (1.0)	0	

Length Frequency Distribution

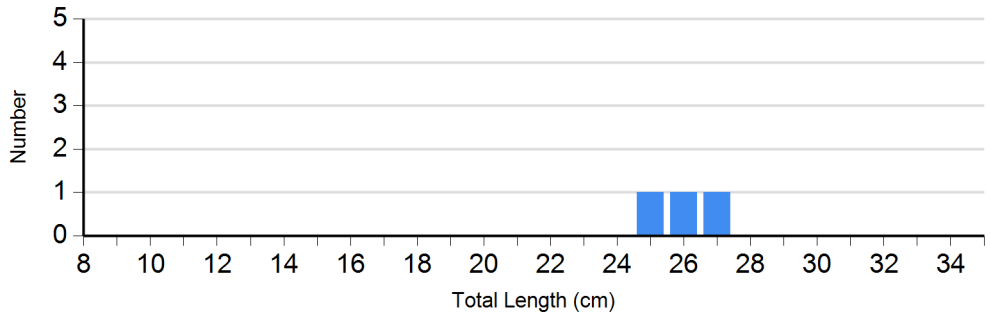
Length frequency histogram of species sampled by year.

Species: Black Crappie
Gear: AFS std frame net



2017

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



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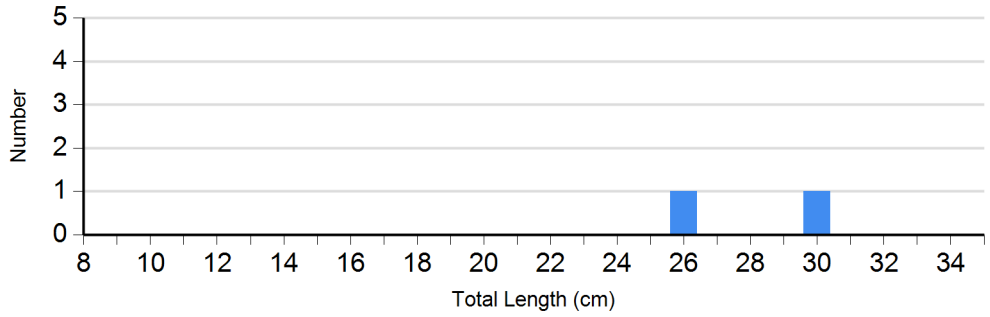

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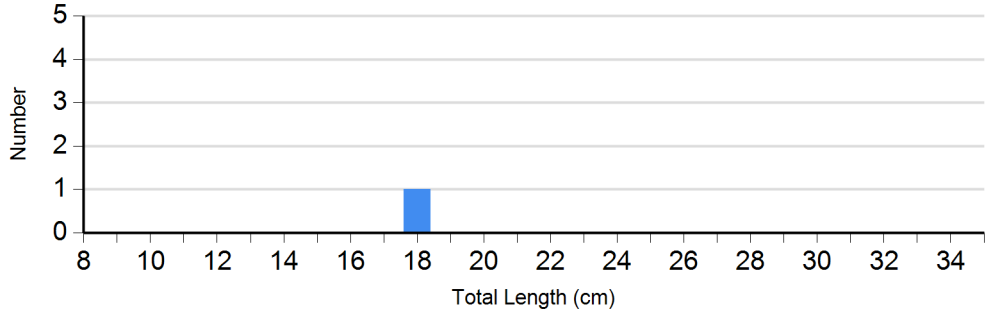

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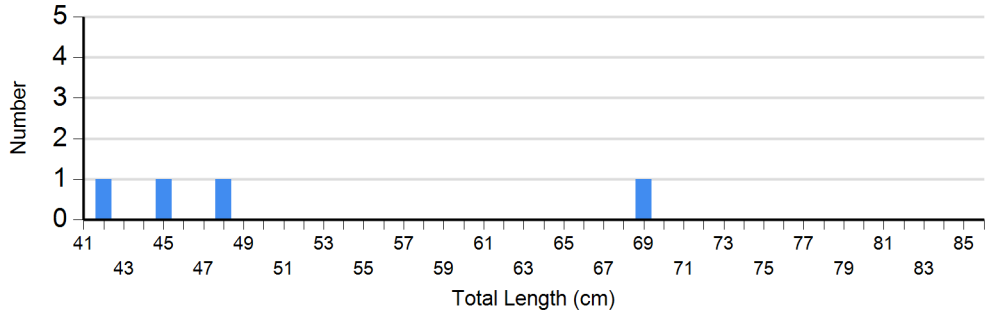
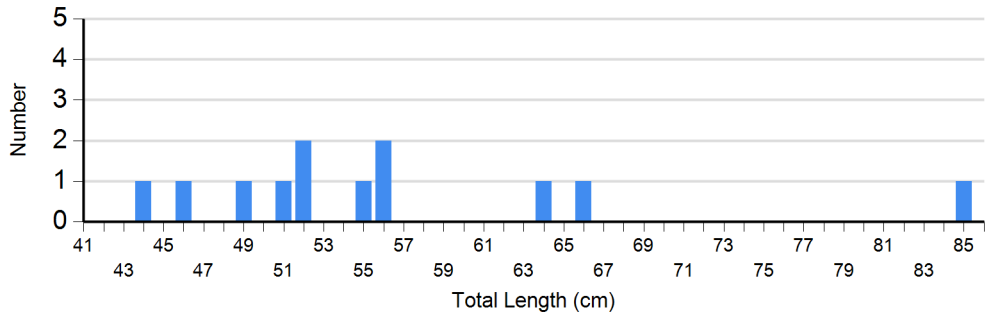
Species: Northern Pike
Gear: AFS std gill net



2016



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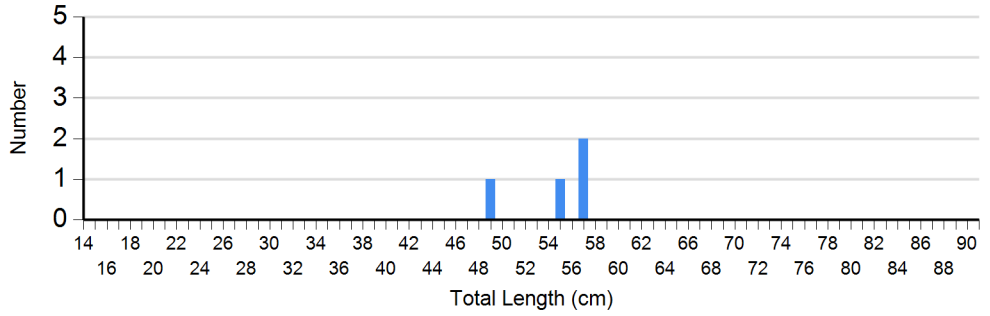
Species: Northern Pike
Gear: std exp gill net



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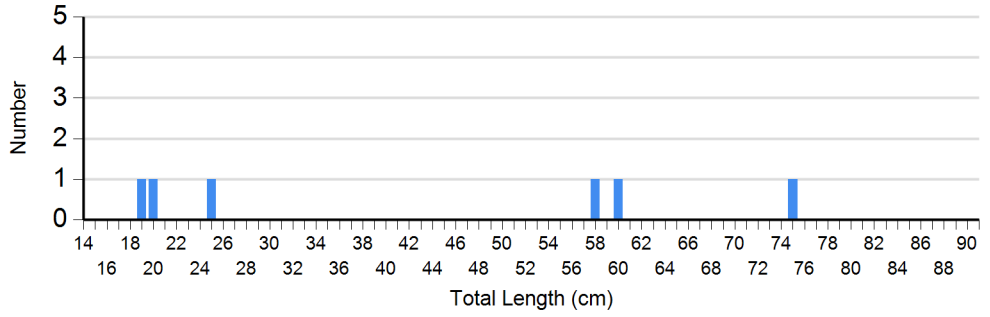

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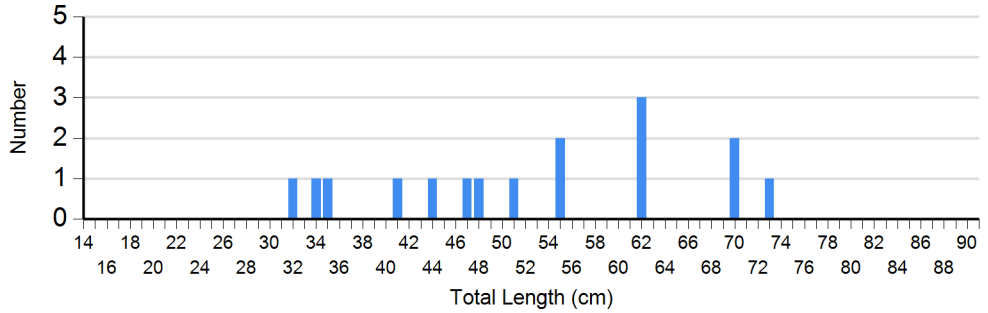
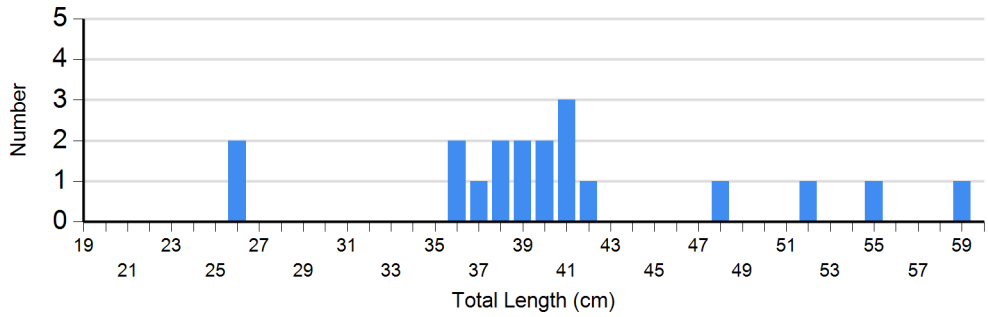
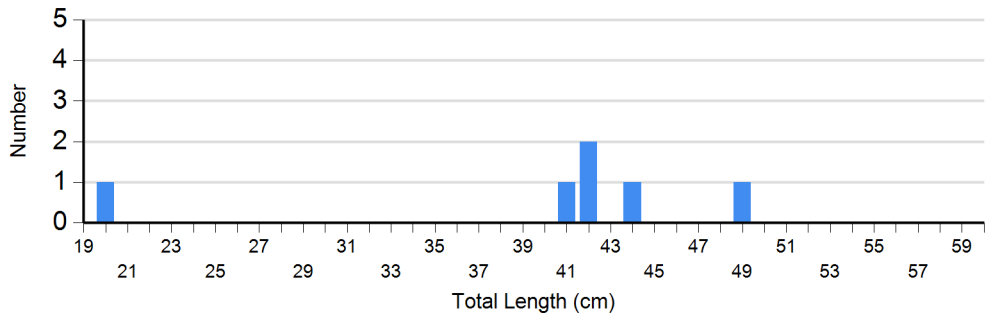


2015

Species: Walleye
Gear: AFS std gill net

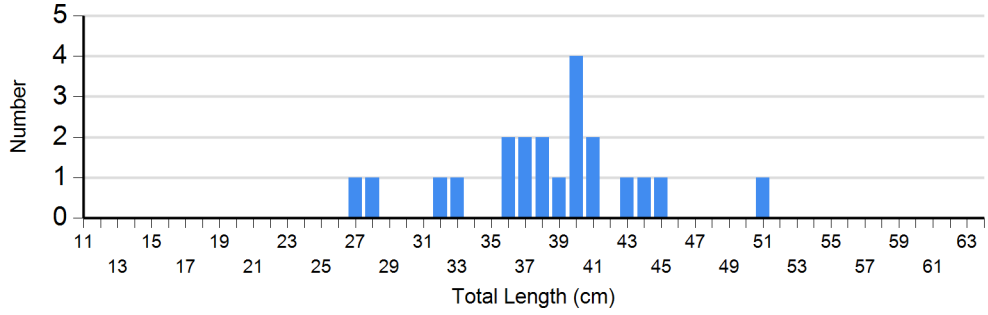


2016

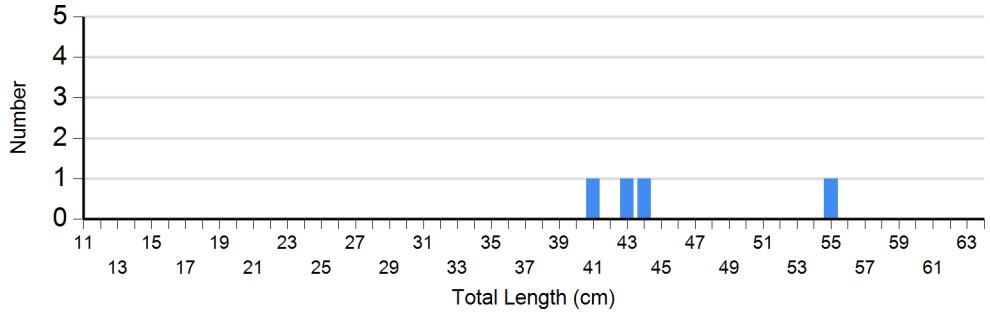


2017

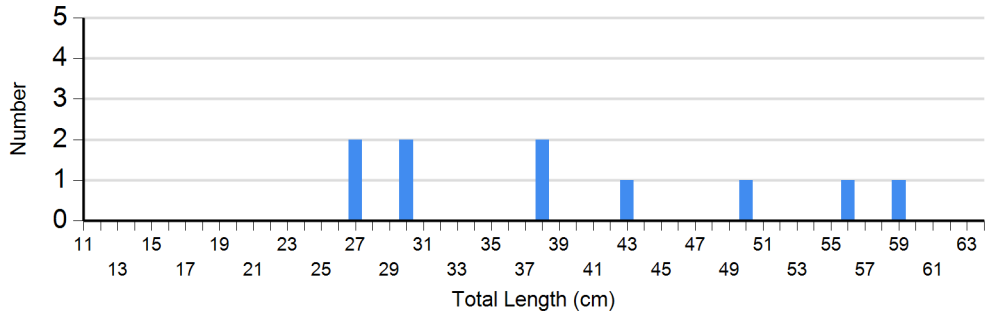
Species: Walleye
Gear: std exp gill net



2013

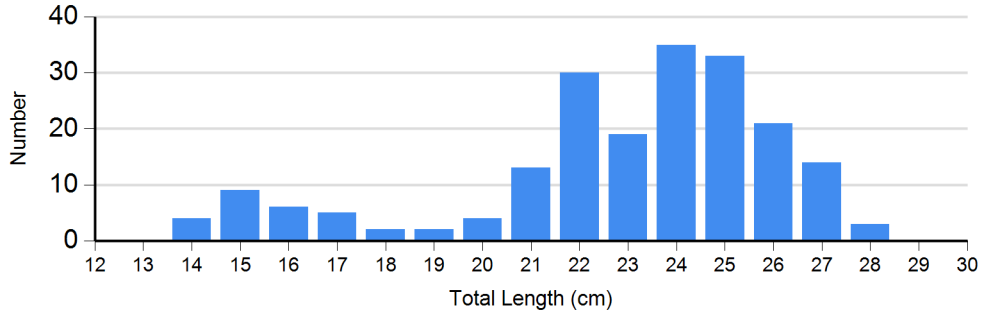


2014

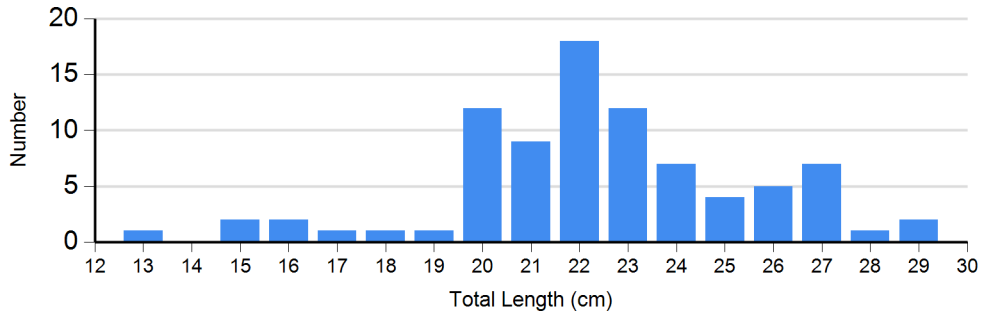


2015

Species: Yellow Perch
Gear: AFS std gill net

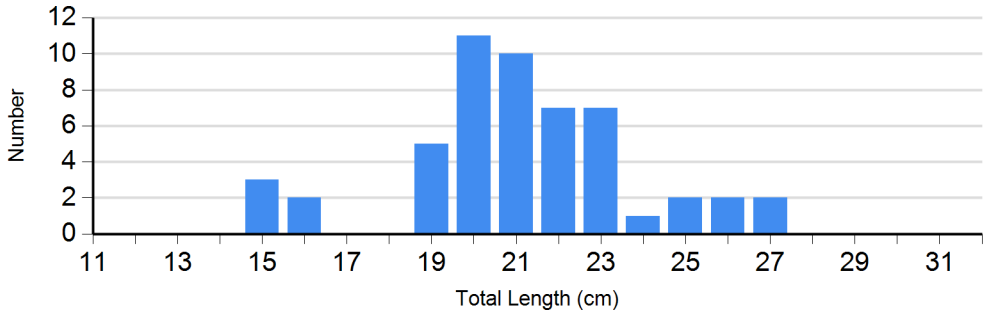


2016

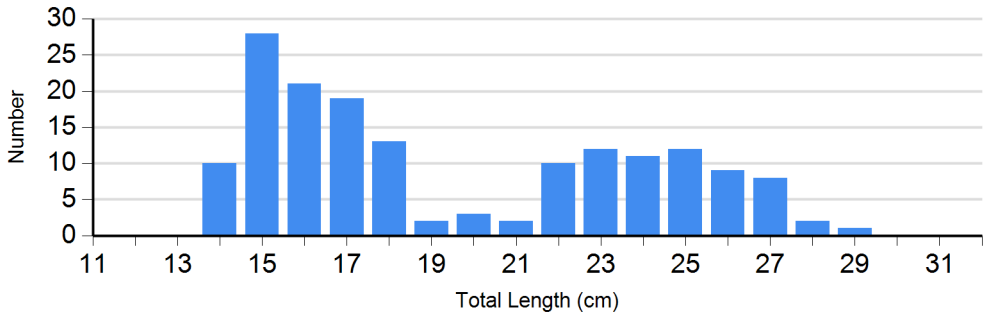


2017

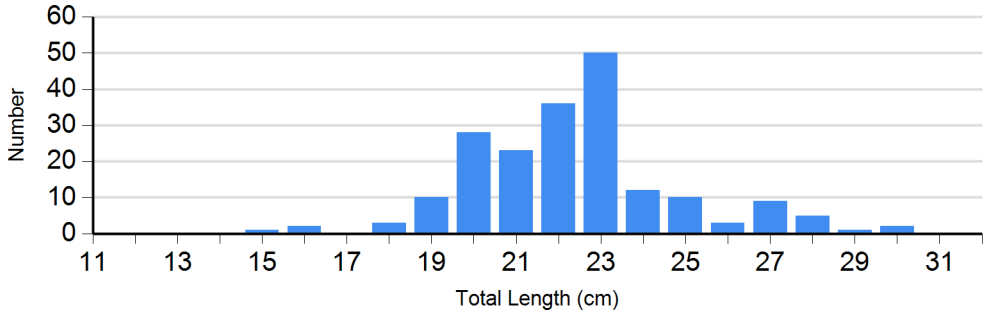
Species: Yellow Perch
Gear: std exp gill net



2013



2014

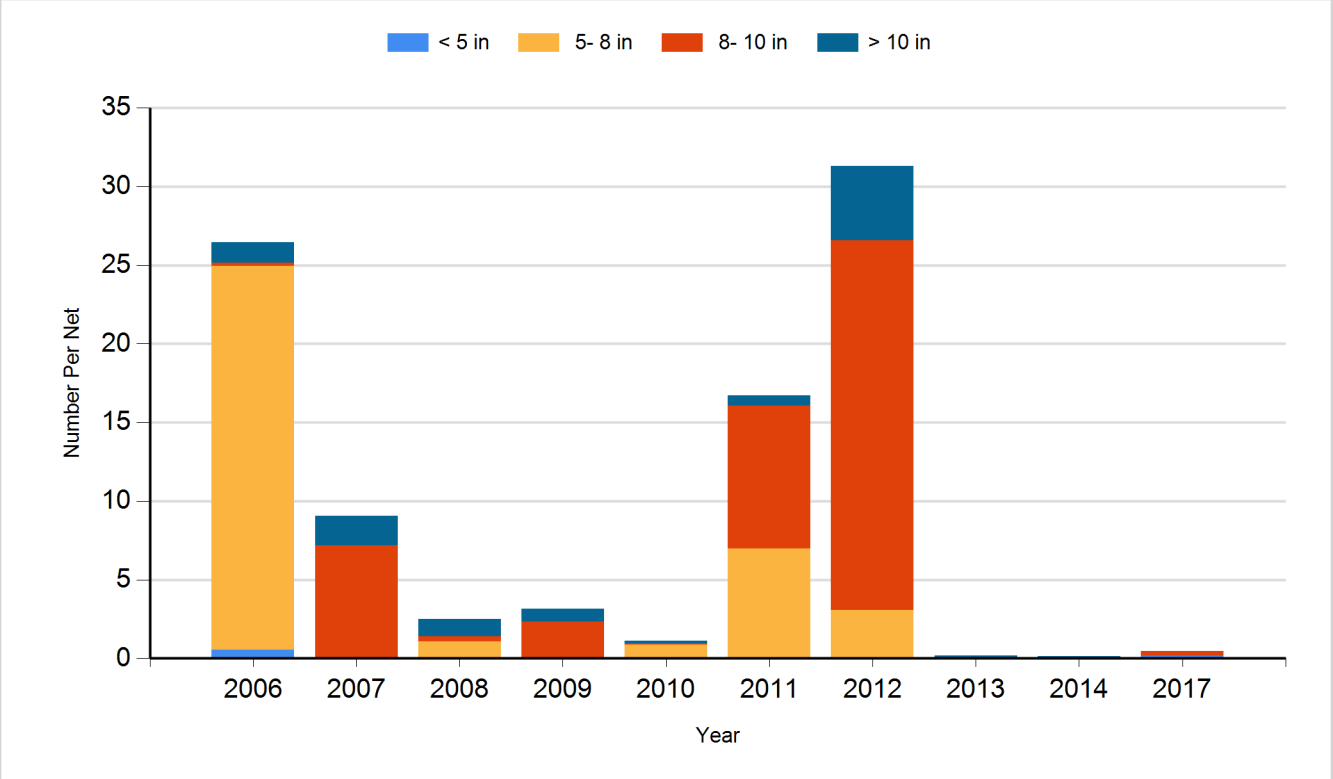


2015

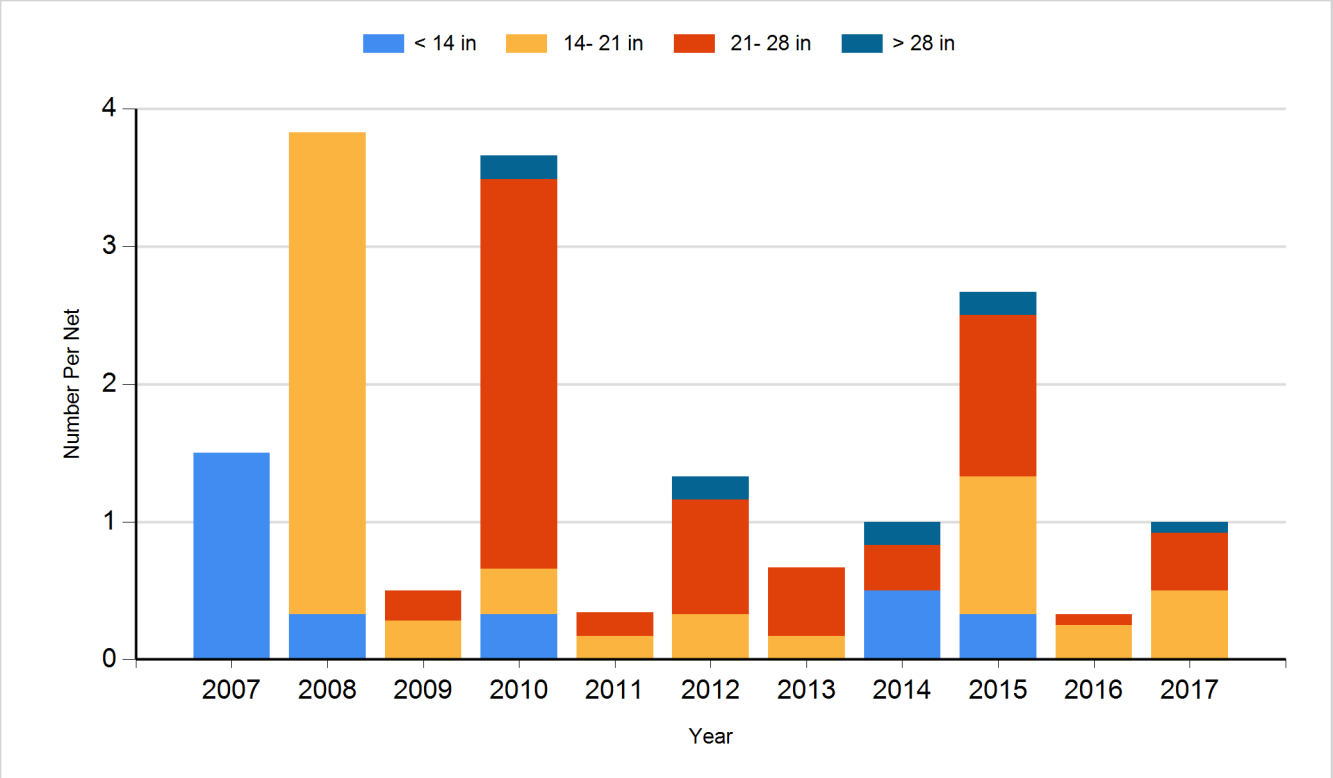
Historic Fish Sizes and Relative Abundance

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

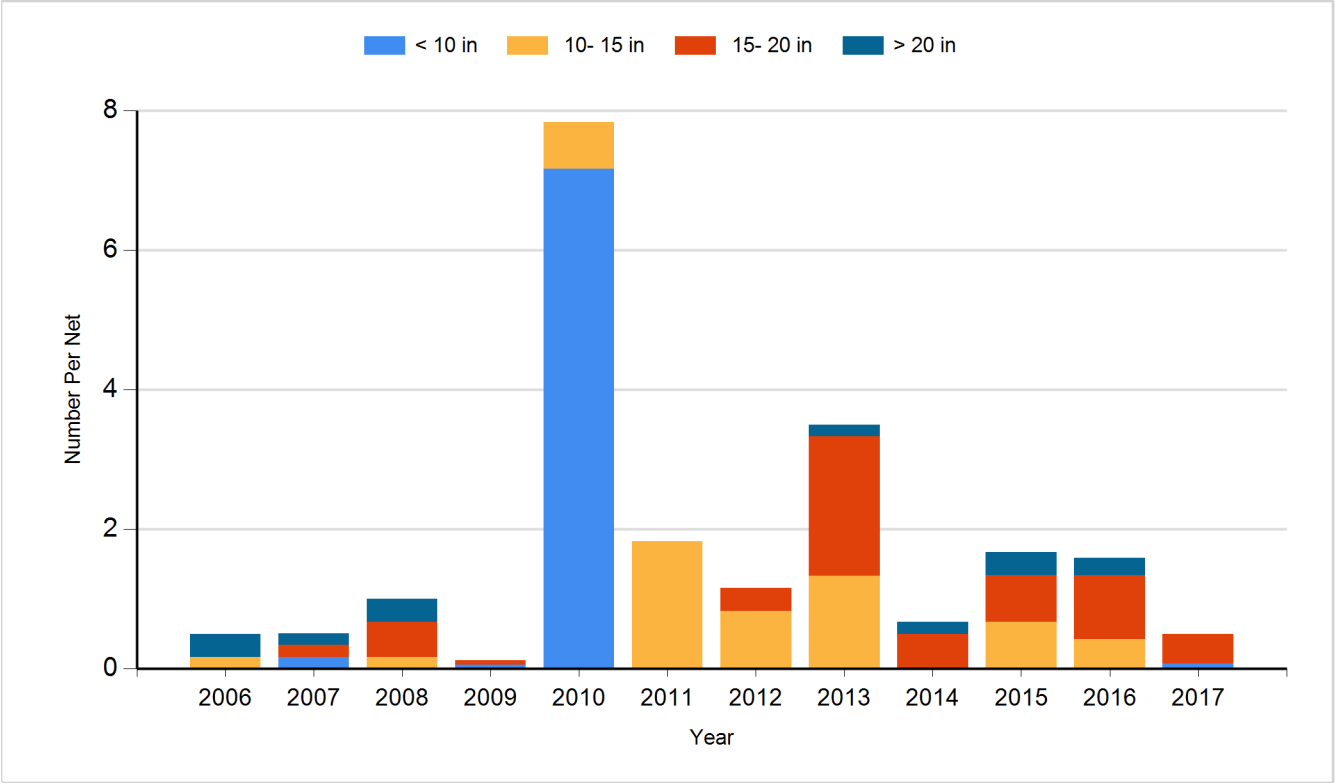
Species: Black Crappie
Gear: Frame Net



Species: Northern Pike
Gear: Gill Net



Species: Walleye
Gear: Gill Net



Species: Yellow Perch
Gear: Gill Net