

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Mina, Edmunds County
SNK-Lake-23-800
2016

Lake Information

Name:	Mina	Maximum Depth:	27 Feet
County:	Edmunds	Mean Depth:	9 Feet
Surface Area:	741 Acres		

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	August 09, 2016	4 net-nights
AFS std gill net	August 10, 2016	4 net-nights
AFS std gill net	August 11, 2016	4 net-nights
boat shocker (night)	September 29, 2016	3620 seconds

Common Fish Species Present

Walleye

Channel Catfish

Bluegill

Black Crappie

Black Bullhead

Yellow Perch

Freshwater Drum

White Sucker

Common Carp

Northern Pike

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 gill net	Black Bullhead	16.8	2.9	99		7	3	99	1
	Bluegill	0.3	0.3	50		50		109	3
	Channel Catfish	3.3	0.7	77	10	56	12	110	3
	Common Carp	0.5	0.3	100		33		94	2
	Freshwater Drum	6.9	1.9	99		12	5	96	1
	Largemouth Bass	0.1	0.1	100		0		116	
	Northern Pike	0.3	0.3	25		0		83	7
	Walleye	1.6	0.6	74		16		97	3
	White Sucker	0.7	0.4	100		100		106	2
	Yellow Perch	16.7	4.7	86	3	36	5	102	1
boat shocker (night)	Walleye	77.6	18.7	0		0		98	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
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
AFS std gill net	Black Bullhead										16.8	16.8
	Bluegill										0.3	0.3
	Channel Catfish										3.3	3.3
	Common Carp										0.5	0.5
	Freshwater Drum										6.9	6.9
	Largemouth Bass										0.1	0.1
	Northern Pike										0.3	0.3
	Walleye										1.6	1.6
	White Sucker										0.7	0.7
	Yellow Perch										16.7	16.7
boat shocker (night)	Walleye			54.9	14.4	32.0			7.0	69.0	77.6	42.5
frame net (std 3/4 in)	Black Bullhead	16.2	5.8	0.9	8.9	8.1	85.5	35.2	31.1	41.8		25.9
	Black Crappie	9.0	2.5	3.2	1.1	16.7	31.3	0.2	0.1	0.1		7.1
	Bluegill	10.8	1.8	0.6	1.8	3.9	5.6	6.7	16.5	5.7		5.9
	Bluegill X Gr. Sunfish Hybrid									0.1		0.1
	Channel Catfish	4.8	2.4	3.6	4.2	5.7	1.2	0.6	1.4	0.7		2.7
	Common Carp	6.0	1.9	2.1	1.0	1.1	0.5	0.2	0.6	0.6		1.6
	Freshwater Drum	3.7	2.3	2.1	1.1	1.0		0.4	0.3	0.9		1.5
	Green Sunfish	0.1										0.1
	Northern Pike	0.2	3.2	2.2	2.4	1.1	2.0	0.9	0.8	0.4		1.5
	O. Spotted X Gr. Sunfish Hybrid								0.0			0.0
	Orangespotted Sunfish	0.0			0.0							0.0
	Rock Bass		0.1									0.1
	Shortnose Gar		0.0									0.0
	Snapping Turtle	0.0										0.0
	Sunfish Hybrid	0.0		0.0					0.0			0.0
	Walleye	0.2	0.3	0.3	0.3	0.5	0.7	0.1	0.3	0.1		0.3
	Western Painted Turtle	0.0										0.0
	White Bass	0.1	0.1									0.1
	White Sucker	1.2	0.3	0.3	0.3	0.1	0.1	0.5	0.3	0.3		0.4
	Yellow Perch	1.1	1.7	1.9	1.0	1.4	2.1	1.2	9.6	1.6		2.4
std exp gill net	Black Bullhead	10.3	8.2	4.1	10.7	7.5	44.7	17.0	24.5	23.5		16.7

Gear	Species	CPUE										Avg
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
std exp gill net	Black Crappie				0.5	1.5	1.0			0.0		0.8
	Bluegill							0.7	0.2			0.5
	Channel Catfish	1.0	1.7	0.6	0.8	1.7	1.0	3.2	1.0	2.7		1.5
	Common Carp	15.5	8.7	0.4	0.2	0.2	1.2	0.2	0.5	1.2		3.1
	Freshwater Drum	30.2	19.0	4.3	6.0	7.2	3.3	7.3	5.5	2.3		9.5
	Largemouth Bass						0.2					0.2
	Northern Pike	0.0	3.5	0.5	3.3	0.3	1.3	0.7	0.5	2.3		1.4
	Orangespotted Sunfish		0.0	0.0					0.0			0.0
	Walleye	0.3	1.0	0.1	0.7	1.8	1.2	3.5	0.7	1.7		1.2
	White Sucker						0.2	0.2		0.2	0.2	0.2
	Yellow Perch	4.2	1.7	1.4	6.0	8.3	14.8	8.7	27.2	32.5		11.6

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											
			2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		
AFS std gill net	Northern Pike	PSD											25	
		PSD-P											0	
		Wr											83	
	Walleye	PSD												74
		PSD-P												16
		Wr												97
	Yellow Perch	PSD												86
		PSD-P												36
		Wr												102
boat shocker (night)	Walleye	PSD			0	0	0			0	0	0		
		PSD-P			0	0	0			0	0	0		
		Wr			103	85	84			101	92	98		
frame net (std 3/4 in)	Black Crappie	PSD	100	58	100	20	58	90	100	100	0			
		PSD-P	21	44	26	15	4	15	100	100	0			
		Wr	113	119	118	119	113	112		116	117			
	Northern Pike	PSD	75	18	69	60	84	56	50	67	75			
		PSD-P	25	11	8	7	5	15	6	25	50			
		Wr	93	89	87	79	77	81	73	86	70			
	Walleye	PSD	100	100	60	80	0	25	0	80	0			
		PSD-P	100	40	40	60	0	0	0	40	0			
		Wr	104	105	94	85	89	79	76	102				
	Yellow Perch	PSD	100	20	83	44	67	86	82	13	97			
		PSD-P	65	20	3	11	4	8	5	8	0			
		Wr	86	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	0	44	90	50	75	75	100	57			
		PSD-P	0	0	0	5	0	13	0	33	7			
		Wr		93	91	76	76	76	77	89	84			
Walleye		PSD	100	83	100	0	0	29	62	100	60			

Gear	Species	Index	Year									
			2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
std exp gill net	Walleye	PSD-P	50	33	0	0	0	0	5	25	20	
		Wr	100	107	115	82	86	84	91	104	96	
	Yellow Perch	PSD	100	30	38	44	40	81	81	43	92	
		PSD-P	80	30	0	11	14	10	12	20	15	
		Wr	95	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+
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+
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)		
2007	2			429 (1)			514 (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+
2016	200	159 (24)	223 (23)	244 (152)	282 (1)						
2015	195	159 (2)	221 (154)	249 (19)	270 (19)	302 (1)					
2014	163	164 (91)	225 (19)	248 (37)	258 (5)	267 (12)					

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

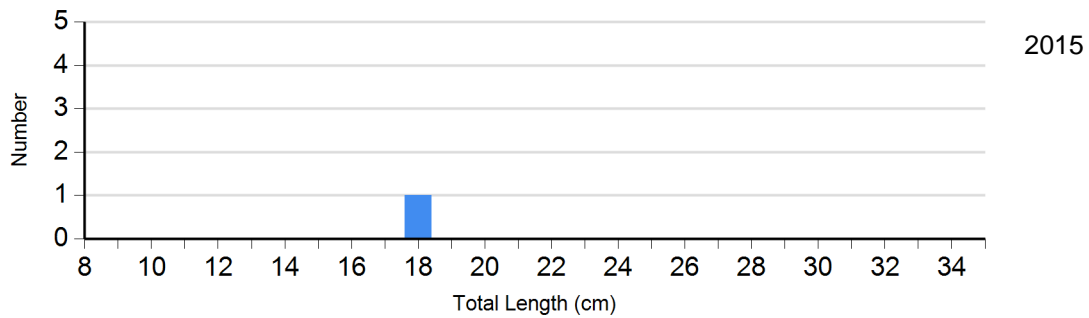
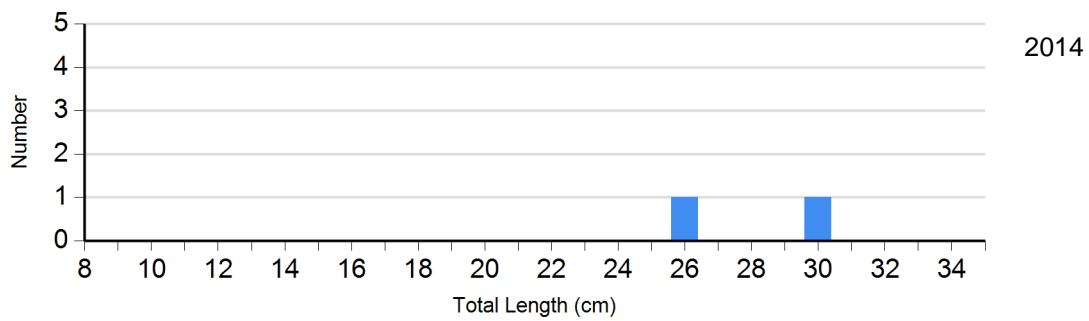
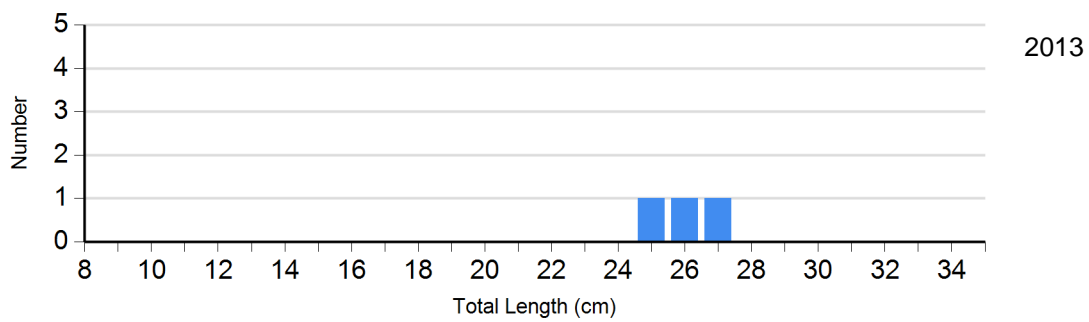
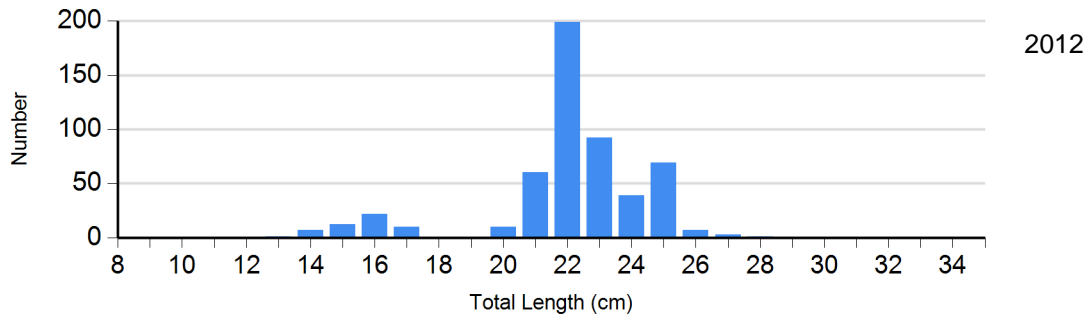
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

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	2012	52	122 (0.9)	400	112 (0.4)	80	106 (1.2)	0	
	2014	0		0		1	111	1	122
	2015	1	117	0		0		0	
Northern Pike Gill Net	2012	2	80 (3.1)	5	74 (3.9)	1	81	0	
	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	0		0		0		0	
Walleye Gill Net	2012	5	85 (0.6)	2	82 (2.7)	0		0	
	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		0		0		0	
Yellow Perch Gill Net	2012	17	110 (2.1)	63	106 (1.1)	9	101 (2.1)	0	
	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	0		0		0		0	

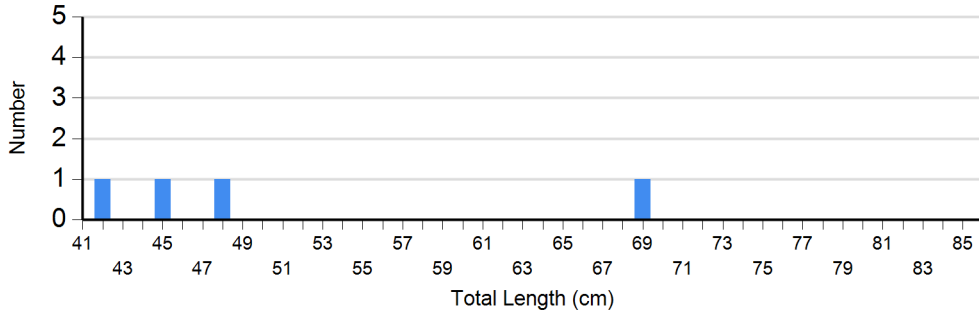
Length Frequency Distribution

Length frequency histogram of species sampled by year.

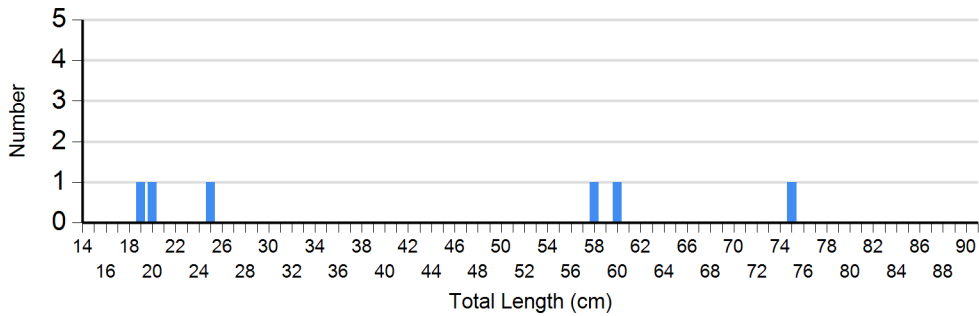
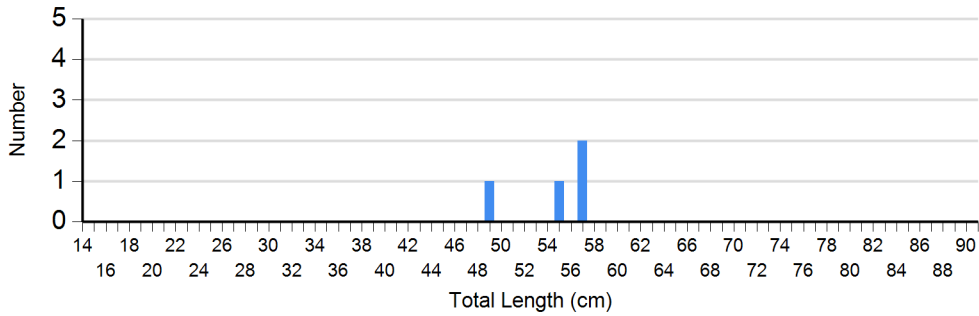
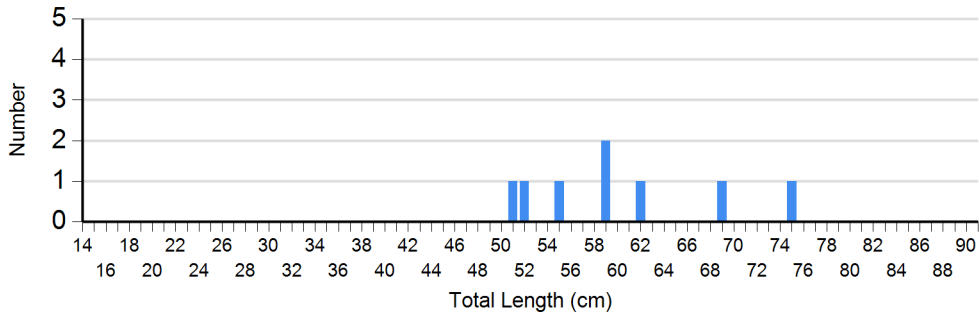
Species: Black Crappie
Gear: frame net (std 3/4 in)

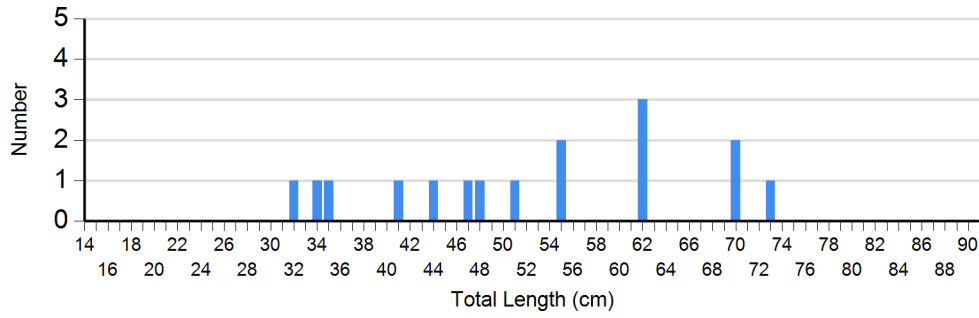


Species: Northern Pike
Gear: AFS std gill net



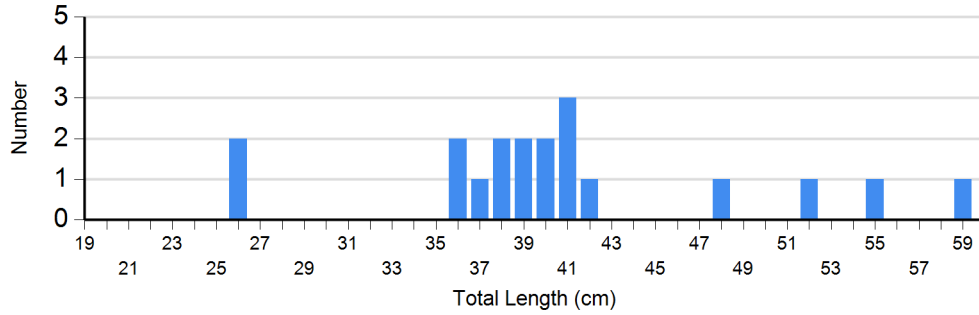
Species: Northern Pike
Gear: std exp gill net





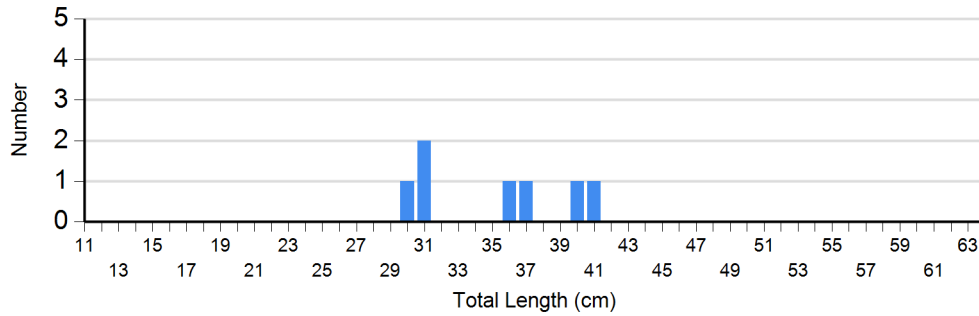
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Species: Walleye
Gear: AFS std gill net

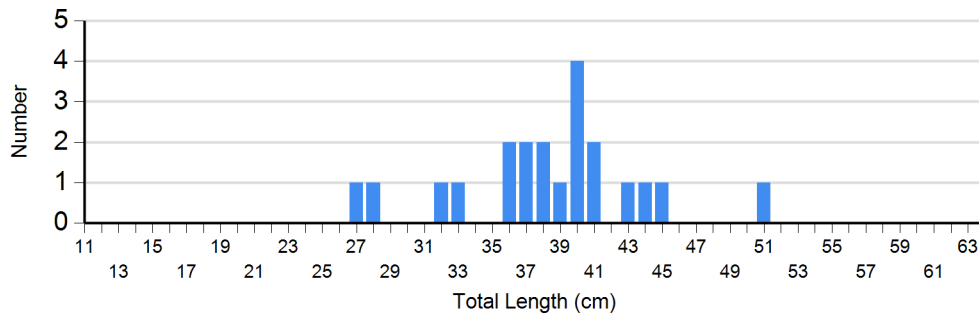


2016

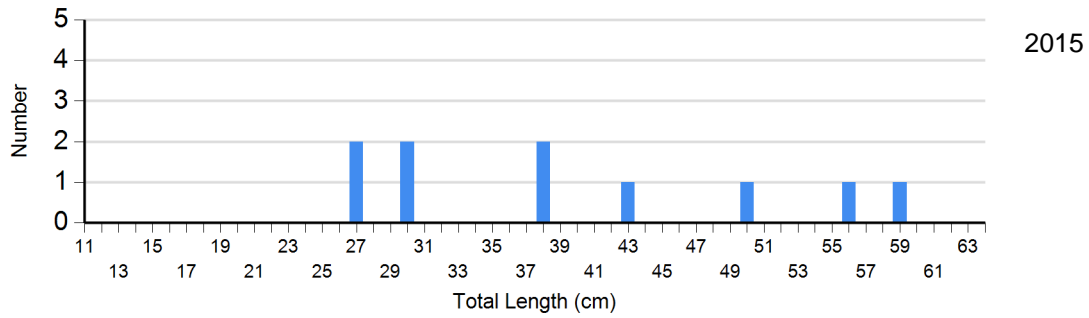
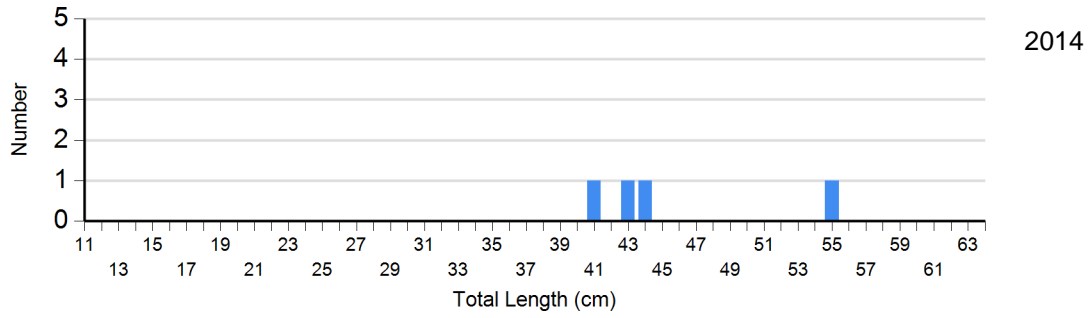
Species: Walleye
Gear: std exp gill net



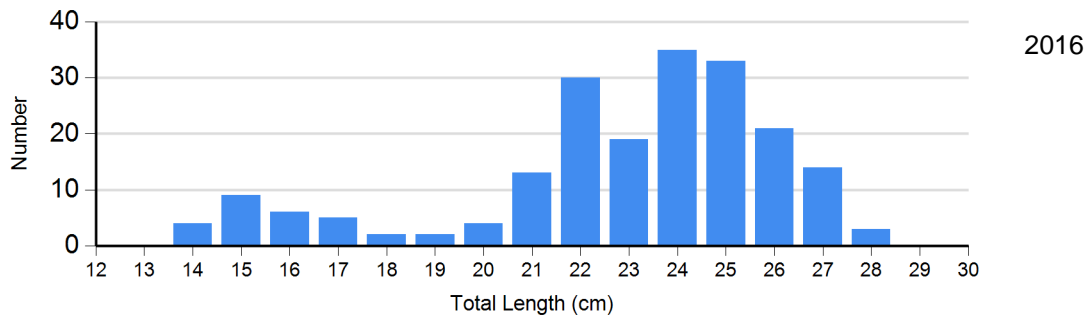
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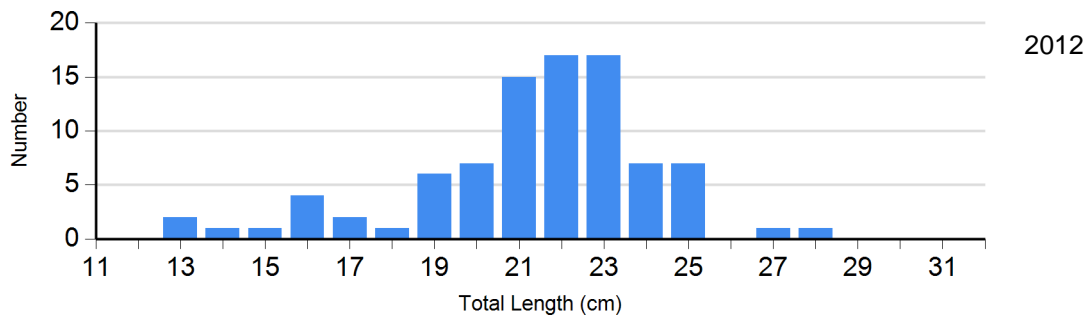
2013

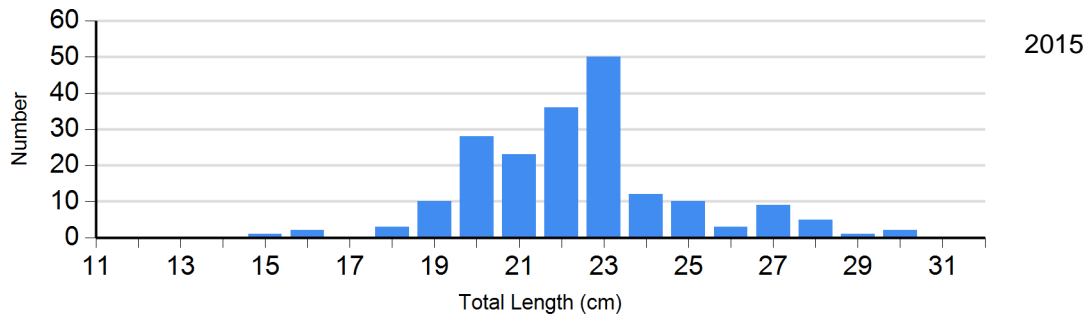
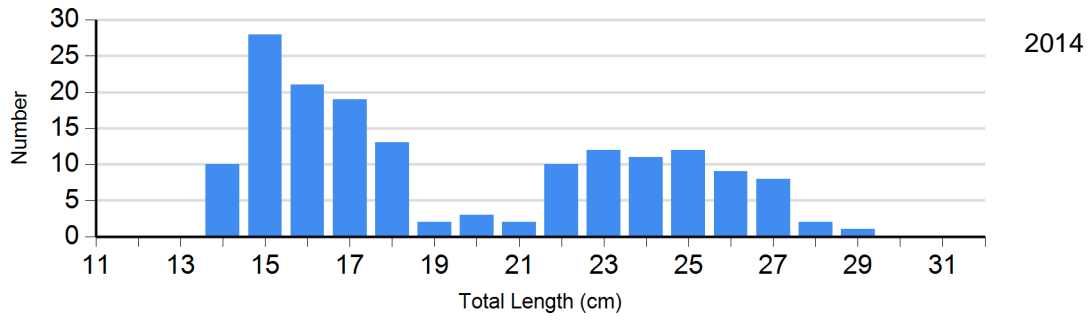
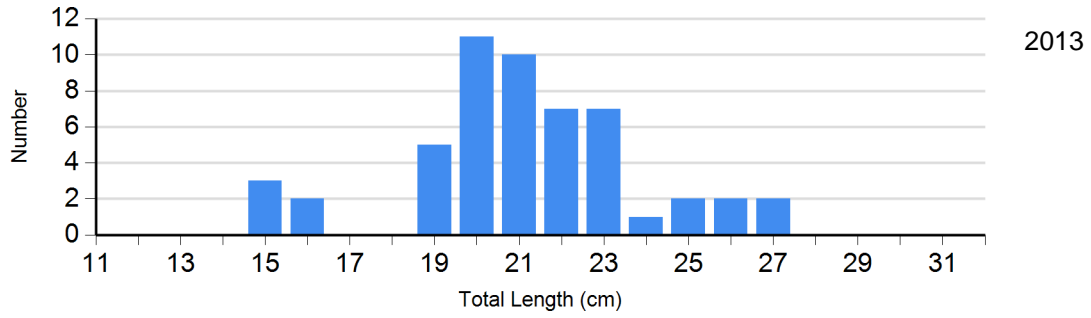


Species: Yellow Perch
Gear: AFS std gill net



Species: Yellow Perch
Gear: std exp gill net

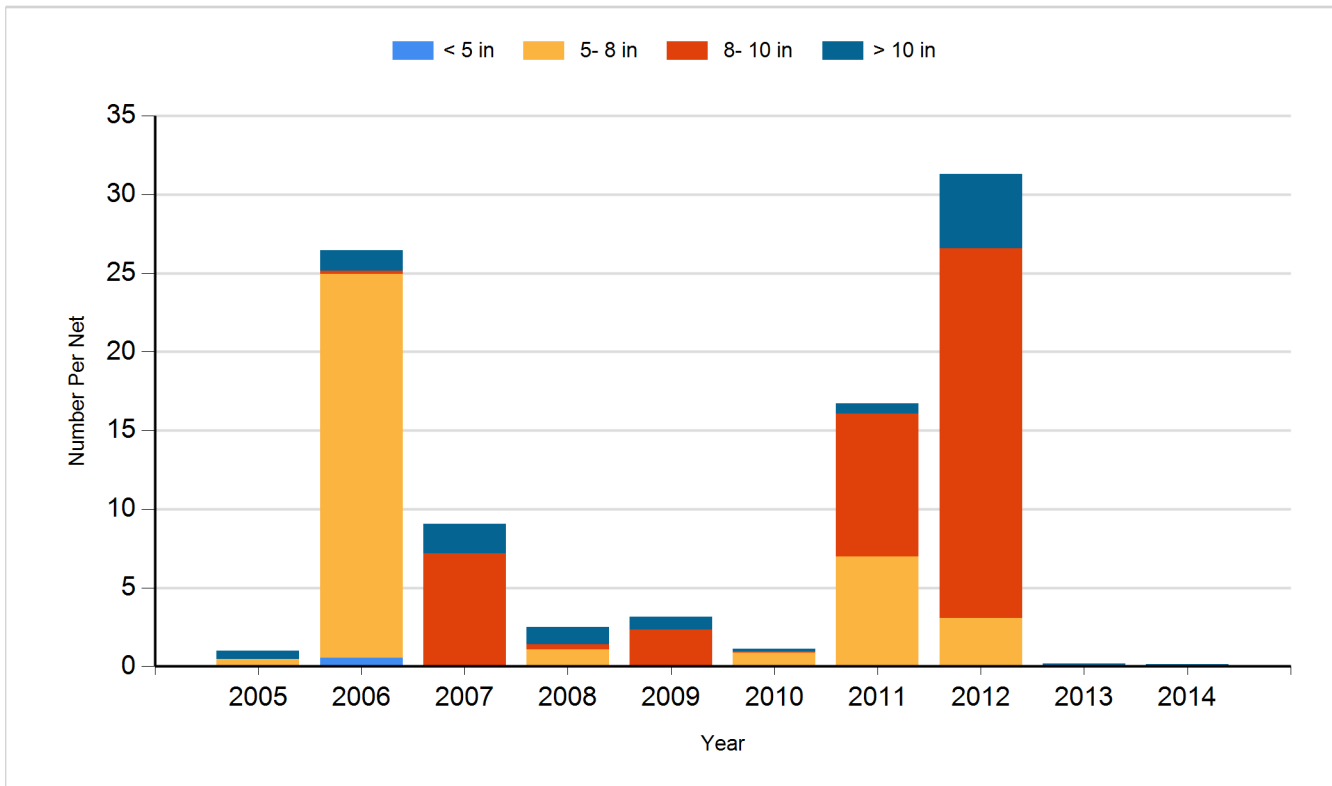




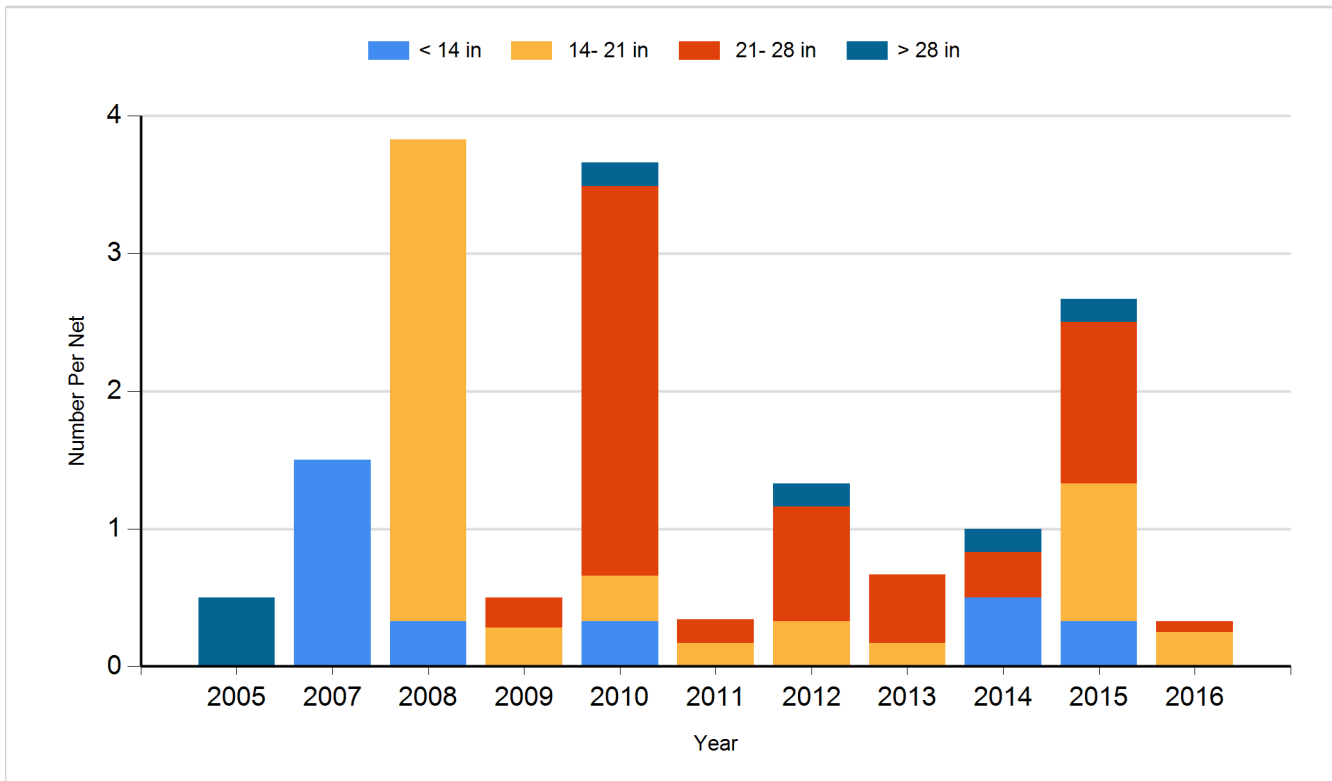
Historic Fish Sizes and Relative Abundance

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

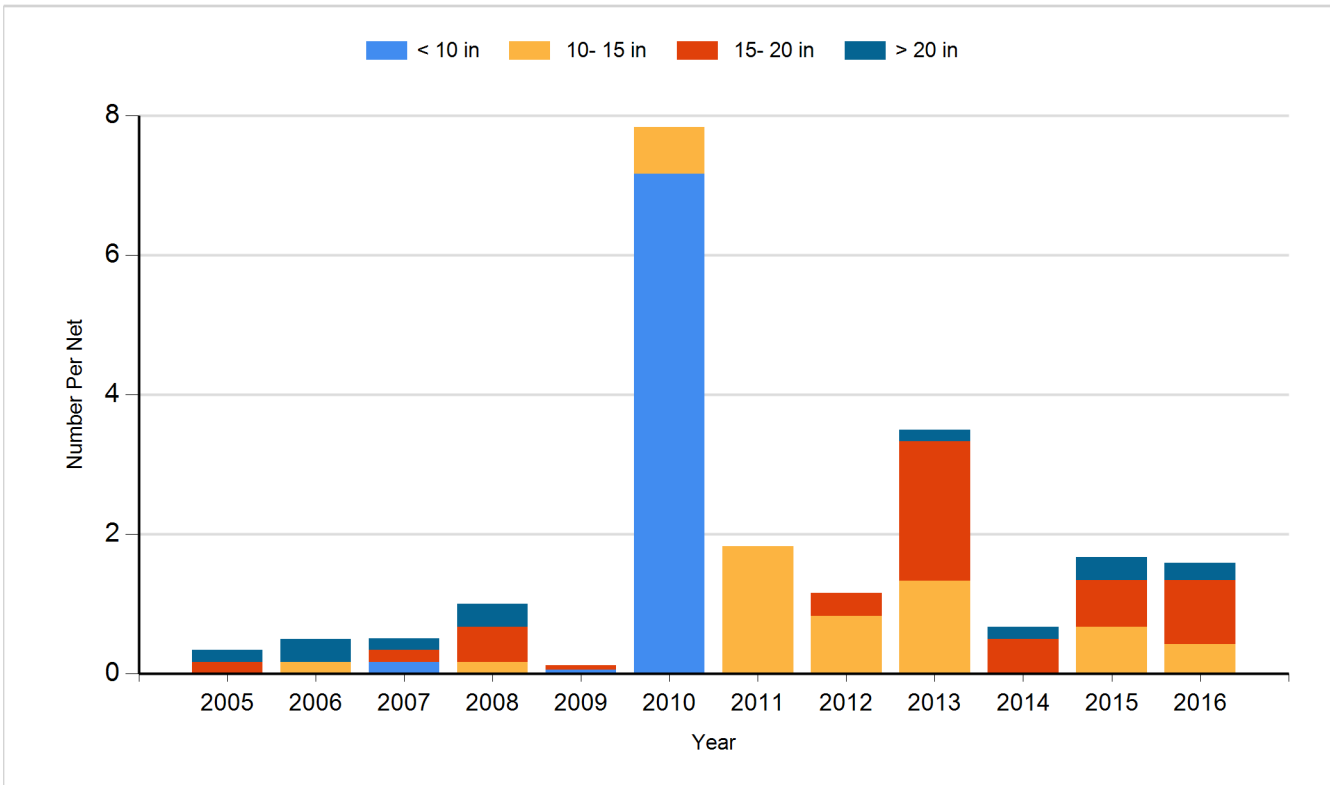
Species: Black Crappie
Gear: Frame Net



Species: Northern Pike
Gear: Gill Net



Species: Walleye
Gear: Gill Net



Species: Yellow Perch
Gear: Gill Net

