

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Sharpe, Hughes County
FTR-Lake-6327-001
2017

Lake Information

Name: Sharpe
County: Hughes
Surface Area: 58,660 Acres

Surveys and Investigations

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

Gear	Date	Effort
AFS gill net (1/2 inch)	August 08, 2017	72 net-nights
AFS std gill net	August 08, 2017	72 net-nights

Common Fish Species Present

Walleye

Channel Catfish

Common Carp

Smallmouth Bass

White Bass

Freshwater Drum

Yellow Perch

Sauger

Gizzard Shad

River Carpsucker

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 gill net (1/2 inch)	Channel Catfish	0.1	0.0	20		0		91	4
	Common Carp	0.0	0.0	100		0		93	
	Freshwater Drum	0.0	0.0	100		100		90	
	Gizzard Shad	0.0	0.0	0					
	Rainbow Smelt	0.0	0.0						
	Smallmouth Bass	0.0	0.0	0		0			
	Spottail Shiner	0.0	0.0						
	Walleye	0.1	0.0	0		0		79	2
	Yellow Perch	0.1	0.1	17		0		83	6
AFS std gill net	Bigmouth Buffalo	0.0	0.0	100		100		88	3
	Channel Catfish	4.9	0.4	68	3	18	3	85	1
	Common Carp	0.9	0.2	97		24	8	80	2
	Flathead Catfish	0.0	0.0	100		0		70	13
	Freshwater Drum	0.6	0.1	98		95		87	2
	Gizzard Shad	0.3	0.1	100				97	2
	Goldeye	0.0	0.0						
	Lake Herring	0.0	0.0	100		100		104	
	Northern Pike	0.0	0.0	50		0		162	94
	River Carpsucker	0.2	0.1	94		50	21	98	3
	Sauger	0.4	0.1	93		26	13	72	5
	Shorthead Redhorse	0.1	0.1	100		100		102	3
	Shovelnose Sturgeon	0.0	0.0						
	Smallmouth Bass	0.8	0.4	70	9	32	9	99	2
	Smallmouth Buffalo	0.1	0.0	100		100		77	4
	Spottail Shiner	0.0	0.0						
	Walleye	5.0	0.7	35	3	1		77	1
	White Bass	0.8	0.4	100		100		93	2
	White Sucker	0.0	0.0	100		100		88	2
	Yellow Perch	0.6	0.2	57	11	19	9	87	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 gill net (1/2 inch)	Channel Catfish										0.1	0.1
	Common Carp										0.0	0.0
	Freshwater Drum										0.0	0.0
	Gizzard Shad										0.0	0.0
	Rainbow Smelt										0.0	0.0
	Smallmouth Bass										0.0	0.0
	Spottail Shiner										0.0	0.0
	Walleye										0.1	0.1
	Yellow Perch									0.1	0.1	
AFS std gill net	Bigmouth Buffalo										0.0	0.0
	Black Crappie							0.0				0.0
	Channel Catfish							2.3			4.9	3.6
	Common Carp							0.4			0.9	0.7
	Flathead Catfish							0.0			0.0	0.0
	Freshwater Drum							0.4			0.6	0.5
	Gizzard Shad							0.2			0.3	0.3
	Goldeye							0.0			0.0	0.0
	Lake Herring										0.0	0.0
	Northern Pike										0.0	0.0
	Rainbow Trout							0.0				0.0
	River Carpsucker							0.8			0.2	0.5
	Sauger							1.0			0.4	0.7
	Shorthead Redhorse							0.6			0.1	0.4
	Shortnose Gar							0.0				0.0
	Shovelnose Sturgeon							0.0			0.0	0.0
	Smallmouth Bass							1.9			0.8	1.4
	Smallmouth Buffalo							0.3			0.1	0.2
	Spottail Shiner										0.0	0.0
	Walleye								12.9		5.0	9.0
White Bass								0.6		0.8	0.7	
White Sucker								0.0		0.0	0.0	
Yellow Perch								1.3		0.6	1.0	
boat shocker (night)	Sauger	0.0	0.0	0.0								0.0

CPUE

Gear	Species	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Avg	
boat shocker (night)	Smallmouth Bass	16.5										16.5	
	Walleye	48.2	41.9	38.2	14.6							35.7	
frame net (std 3/4 in)	Bigmouth Buffalo		0.1		0.2							0.2	
	Black Bullhead	0.3	0.4	0.3	0.2	1.4						0.5	
	Black Crappie	1.1	4.7	5.3	3.0	8.1						4.4	
	Bluegill	2.2	0.8	1.3		1.6							1.5
	Channel Catfish	10.5	4.2	2.3	4.2	3.0							4.8
	Common Carp	2.3	5.2	4.0	3.1	2.4							3.4
	Freshwater Drum	0.6		0.1									0.4
	Gizzard Shad	0.3	4.6	1.8	0.3	1.3							1.7
	Green Sunfish			0.1									0.1
	Largemouth Bass	0.1				0.1							0.1
	Northern Pike	0.7	0.4			0.0							0.4
	Orangespotted Sunfish	0.0											0.0
	Rainbow Trout		0.0	0.0	0.0								0.0
	River Carpsucker	1.5	0.4	0.9									0.9
	Sauger	1.7	0.5	0.3	0.1								0.7
	Shorthead Redhorse	0.8	1.0	0.9	0.1								0.7
	Shortnose Gar	0.0	0.0	0.0	0.0	0.0							0.0
	Smallmouth Bass	0.9	2.0	1.2	0.8	1.2							1.2
	Smallmouth Buffalo	0.2	2.2	0.1	1.1								0.9
	Stonecat		0.0										0.0
	Walleye	1.2	1.1	0.8	0.9	1.2							1.0
	White Bass	1.0	21.1	8.9	11.9	3.2							9.2
	White Crappie	1.3	0.4	1.0	0.1	0.1							0.6
White Sucker	0.3	1.0	0.3	0.3								0.5	
Yellow Perch			0.1									0.1	
hoop net	Black Crappie	2.0										2.0	
	Channel Catfish	1.0										1.0	
	Orangespotted Sunfish	0.0										0.0	
	Sauger	1.5										1.5	
	Walleye	5.0										5.0	
	White Bass	0.5										0.5	
	White Crappie	0.0										0.0	
rod and reel	Smallmouth Bass	30,30		8,460	3,480	11,64						1347	
		0.0		.0	.0	0.0						0.0	

Gear	Species	CPUE											
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Avg	
smb mono gill net	Bigmouth Buffalo					0.0							0.0
	Channel Catfish					0.9							0.9
	Common Carp					0.5							0.5
	Freshwater Drum					0.2							0.2
	Gizzard Shad					0.7							0.7
	Goldeye					0.0							0.0
	Northern Pike					0.0							0.0
	River Carpsucker					0.2							0.2
	Sauger					0.1							0.1
	Shorthead Redhorse					0.5							0.5
	Smallmouth Bass			2.0	1.1	1.0							1.4
	Walleye					6.1							6.1
	White Bass					0.1							0.1
	White Sucker					0.1							0.1
Yellow Perch					0.3							0.3	
std exp gill net	Bigmouth Buffalo	0.1									0.2		0.2
	Black Bullhead	0.1			0.1	0.1					0.0		0.1
	Black Crappie	0.0		0.1	0.1	0.0	0.0		0.1	0.1			0.1
	Burbot							0.0					0.0
	Channel Catfish	5.3	5.3	5.0	2.8	6.6	4.4	3.0	4.0	4.8			4.6
	Chinook Salmon										0.0		0.0
	Common Carp	2.4	1.9	1.7	1.9	1.8	2.5	1.1	2.0	1.5			1.9
	Freshwater Drum	0.9	0.1	0.2	0.2	0.3	0.1	0.1	0.4	0.5			0.3
	Gizzard Shad	0.1	0.2	0.2	0.0	0.0	0.0	0.3	0.6	3.6			0.6
	Goldeye		0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0
	Lake Herring								0.6				0.6
	Largemouth Bass								0.0				0.0
	Northern Pike			0.0	0.1	0.0	0.0			0.0	0.0		0.0
	Rainbow Smelt		0.0										0.0
	Rainbow Trout	0.0				0.0			0.0				0.0
	River Carpsucker	0.1	0.5	1.1	0.6	0.3	0.5	2.0	2.7	0.3			0.9
	Sauger	2.6	2.5	1.1	1.8	0.9	1.4	1.6	1.9	1.4			1.7
	Shorthead Redhorse	0.1	0.1	0.0	0.7	0.8	1.3	0.7	1.5	0.3			0.6
	Shortnose Gar	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0
	Shovelnose Sturgeon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0
Smallmouth Bass	0.2	0.4	1.3	0.3	0.2	1.1	0.6	0.7	1.6			0.7	

		CPUE										
Gear	Species	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Avg
std exp gill net	Smallmouth Buffalo		0.0	0.0			0.0	0.1	0.0			0.0
	Spottail Shiner			0.0	0.0				0.0			0.0
	Walleye	18.6	17.2	19.9	18.4	21.9	12.5	8.0	12.9	21.3		16.7
	White Bass	1.5	0.5	0.5	0.4	0.0	0.8	0.2	0.0	0.2		0.5
	White Crappie	0.0		0.1	0.1	0.0				0.8		0.2
	White Sucker		0.0	0.0	0.3		0.1		0.0			0.1
	Yellow Perch	0.6	1.6	1.9	2.6	1.8	1.4	0.9	3.0	2.7		1.8

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 gill net (1/2 inch)	Walleye	PSD											0
		PSD-P											0
		Wr											79
	Yellow Perch	PSD											17
		PSD-P											0
		Wr											83
AFS std gill net	Black Crappie	PSD								0			
		PSD-P								0			
		Wr											
	Northern Pike	PSD											50
		PSD-P											0
		Wr											162
	Walleye	PSD									26		35
		PSD-P									2		1
		Wr											77
	Yellow Perch	PSD									56		57
		PSD-P									22		19
		Wr											87
boat shocker (night)	Walleye	PSD	0	0	0	0							
		PSD-P	0	0	0	0							
frame net (std 3/4 in)	Black Crappie	PSD	59	73	92	71	99						
		PSD-P	41	31	28	15	4						
		Wr	97	99	99	92	97						
	Northern Pike	PSD	93	88					0				
		PSD-P	14	75					0				
		Wr	87	95									
	Walleye	PSD	83	82	69	76	39						
		PSD-P	46	32	31	29	9						
		Wr	80	87	81	89	74						
	Yellow Perch	PSD				0							
		PSD-P				0							
	hoop net	Black Crappie	PSD	75									

Gear	Species	Index	Year										
			2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
hoop net	Black Crappie	PSD-P	75										
		Wr	94										
	Walleye	PSD	80										
		PSD-P	30										
		Wr	74										
smb mono gill net	Northern Pike	PSD						0					
		PSD-P						0					
	Walleye	PSD						0					
		PSD-P						0					
	Yellow Perch	PSD						100					
		PSD-P						100					
std exp gill net	Black Crappie	PSD	0		0	100	100	100			0	0	
		PSD-P	0		0	50	100	100			0	0	
		Wr	98		95	100	104	84			104	102	
	Northern Pike	PSD			100	100	0	100			100	100	
		PSD-P			0	0	0	0			0	0	
		Wr			88	107	78	88			86	86	
	Walleye	PSD	23	40	47	39	41	60	52	41	41		
		PSD-P	1	1	1	1	1	0	1	0	1		
		Wr	85	82	87	83	83	84	85	79	82		
	Yellow Perch	PSD	47	56	36	61	58	74	36	56	62		
		PSD-P	0	0	6	20	9	50	32	15	17		
		Wr	88	89	86	83	91	97	92	96	84		

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	160			226 (151)	236 (5)	190 (1)	314 (3)				
2011	59				201 (18)	201 (18)	229 (10)	212 (5)	282 (7)		272 (1)
2010	106	160 (3)	218 (59)	249 (30)	285 (9)	306 (7)					
2009	94		155 (3)	173 (14)	218 (25)	244 (37)	273 (13)	314 (2)			

Species: Walleye

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2017	377	239 (28)	313 (65)	357 (144)	390 (86)	418 (30)	407 (3)	442 (4)	464 (6)	456 (3)	518 (8)
2016	531	232 (22)	322 (184)	374 (206)	409 (67)		455 (10)	447 (19)	455 (7)	455 (4)	494 (9)
2015	341	214 (34)	327 (121)	382 (130)	450 (5)	426 (15)	423 (18)	416 (11)	432 (6)	465 (1)	
2014	681	245 (150)	337 (292)	389 (25)	397 (63)	427 (80)	423 (38)	426 (17)	456 (6)	461 (10)	
2013	315	249 (35)	349 (23)	380 (102)	397 (95)	395 (28)	426 (16)	465 (7)	444 (4)	424 (1)	454 (6)
2012	945	248 (13)	307 (417)	358 (307)	357 (107)	415 (39)	437 (28)	453 (19)		470 (9)	437 (5)
2011	320	231 (35)	340 (162)	387 (45)	436 (29)	436 (25)	463 (12)	404 (1)	503 (3)		490 (8)
2010	522	261 (172)	348 (99)	394 (106)	411 (63)	416 (60)	414 (3)	447 (8)	434 (1)	459 (2)	498 (7)
2009	427	240 (19)	334 (99)	368 (134)	394 (129)	400 (5)	451 (10)	424 (2)	451 (9)	453 (9)	494 (8)

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).

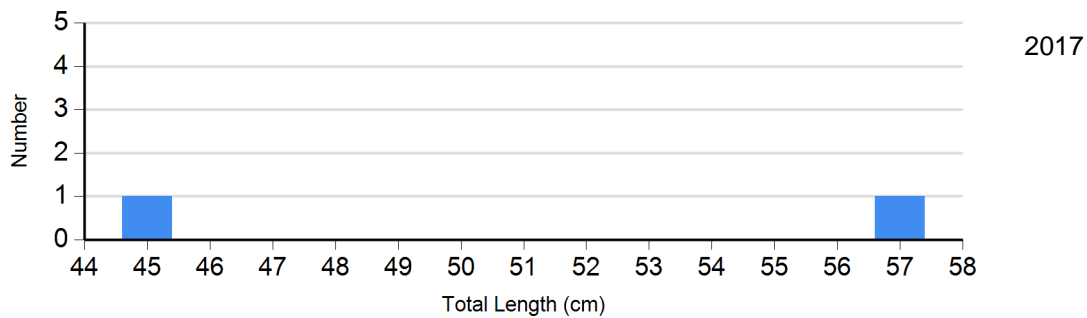
Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Northern Pike Gill Net	2013	0		1	88	0		0	
	2015	0		1	86	0		0	
	2016	0		1	86	0		0	
	2017	1	89	1	235	0		0	
Walleye Gill Net	2013	120	87 (0.6)	178	82 (0.4)	1	77	0	
	2014	92	89 (0.8)	97	81 (0.8)	2	85 (15.5)	0	
	2015	182	80 (1.2)	126	79 (0.7)	1	84	0	
	2016	303	84 (0.5)	203	81 (0.5)	5	73 (1.1)	0	
	2017	232	80 (0.8)	121	72 (0.7)	2	69 (0.6)	2	73 (3.4)
Yellow Perch Gill Net	2013	9	103 (2.9)	8	91 (1.7)	15	97 (3.0)	2	91 (6.7)
	2014	14	96 (2.3)	1	89	6	93 (1.4)	1	35
	2015	31	97 (3.1)	29	96 (1.7)	10	95 (2.4)	1	86
	2016	25	87 (1.5)	29	84 (1.5)	9	80 (4.9)	2	69 (20.2)
	2017	18	88 (1.9)	16	90 (2.9)	8	79 (2.1)	0	

Length Frequency Distribution

Length frequency histogram of species sampled by year.

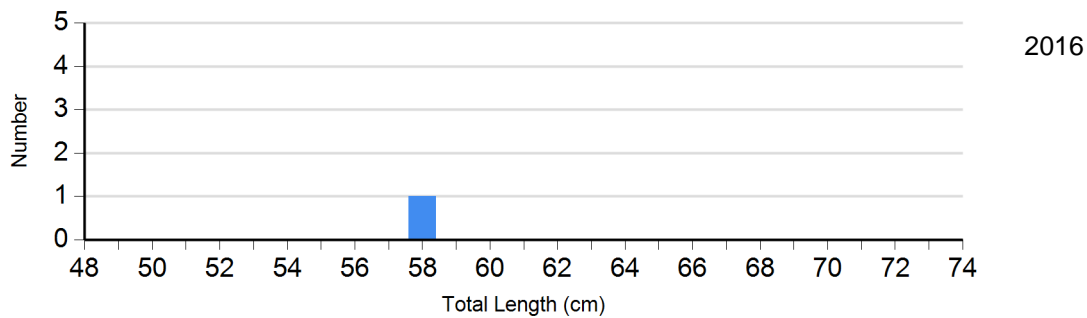
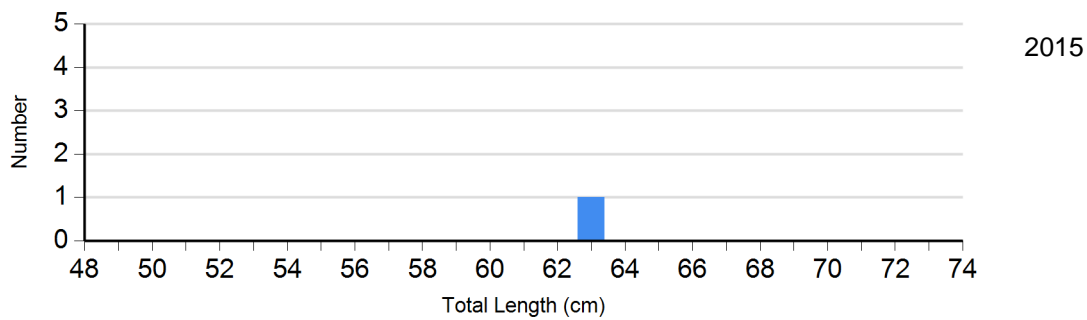
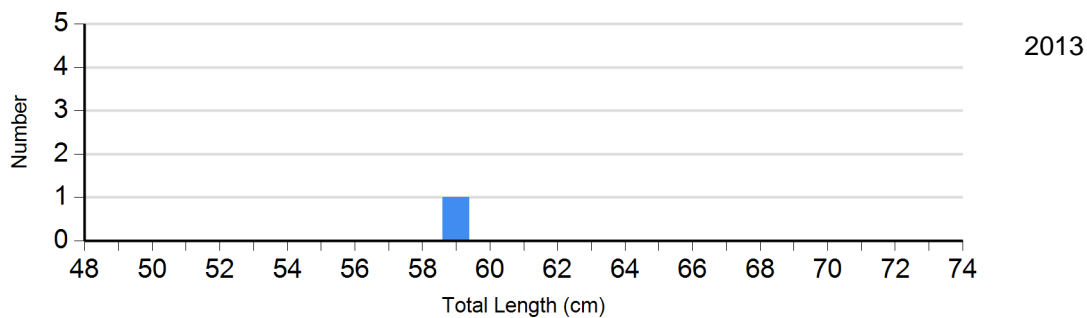
Species: Northern Pike

Gear: AFS std gill net

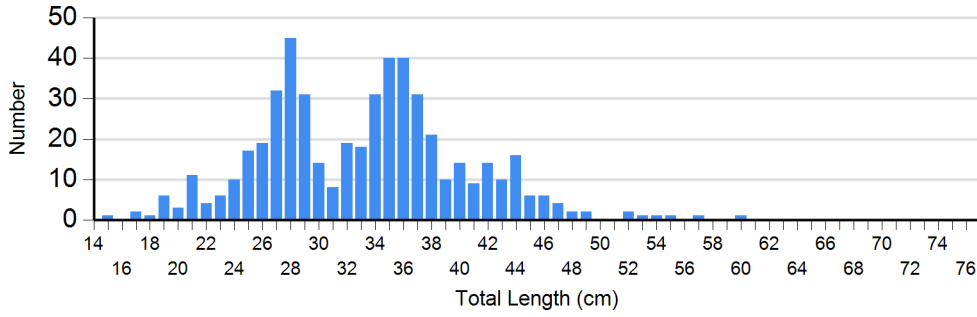


Species: Northern Pike

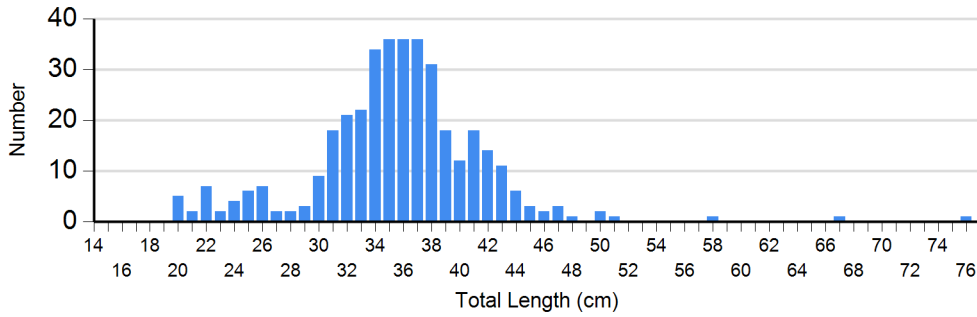
Gear: std exp gill net



Species: Walleye
Gear: AFS std gill net

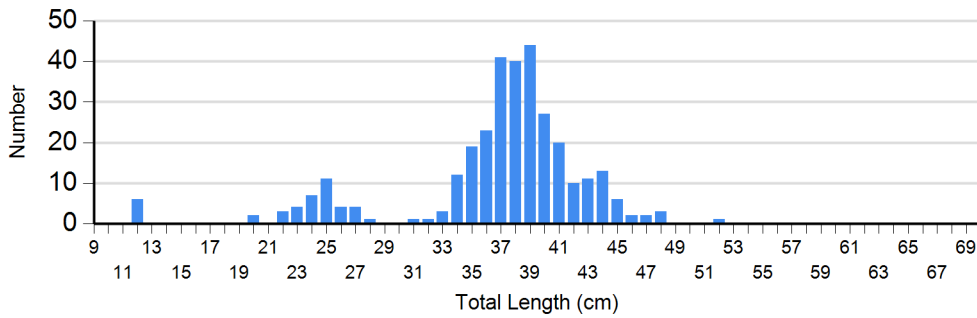


2014

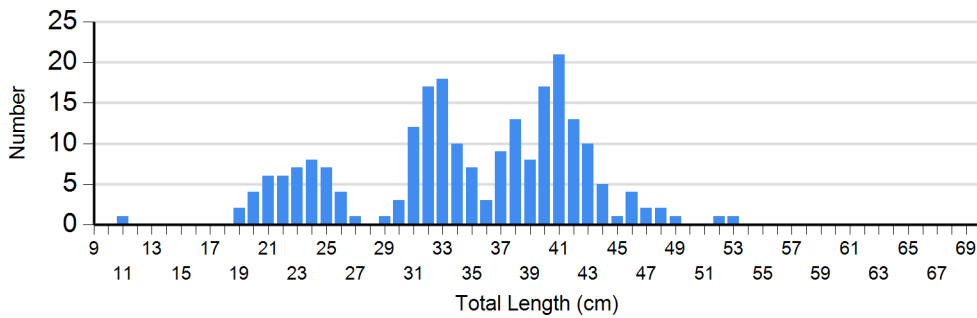


2017

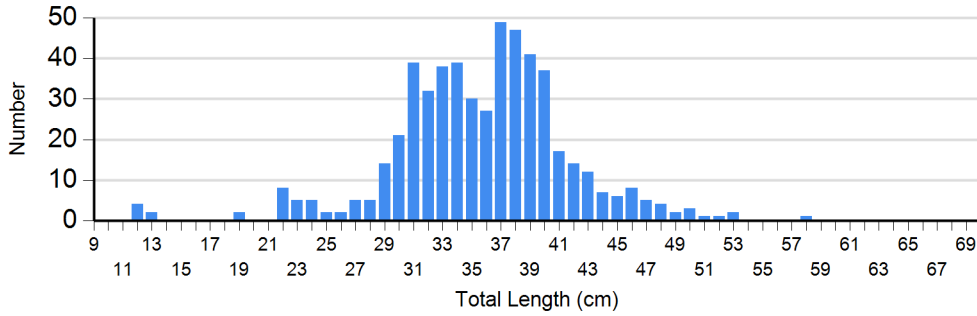
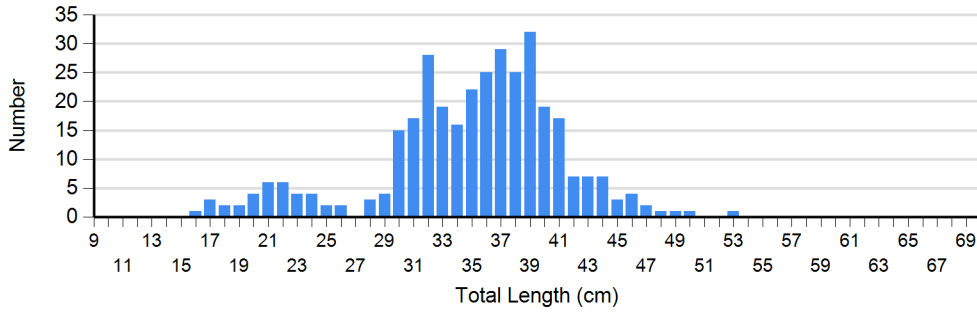
Species: Walleye
Gear: std exp gill net



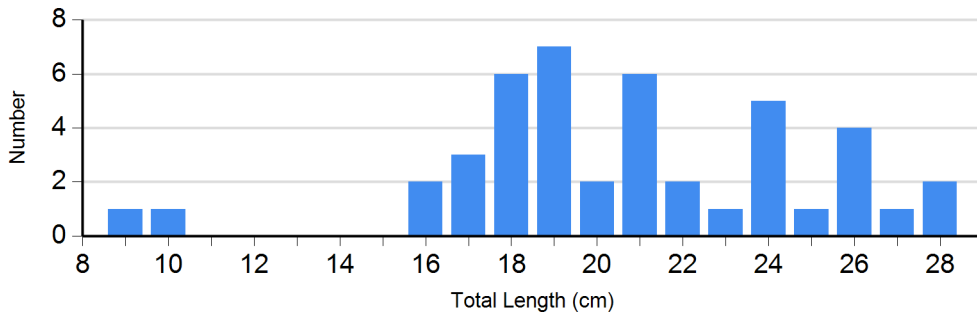
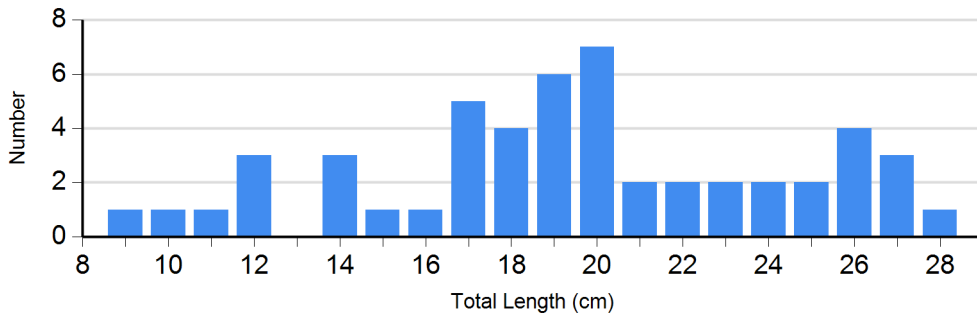
2013



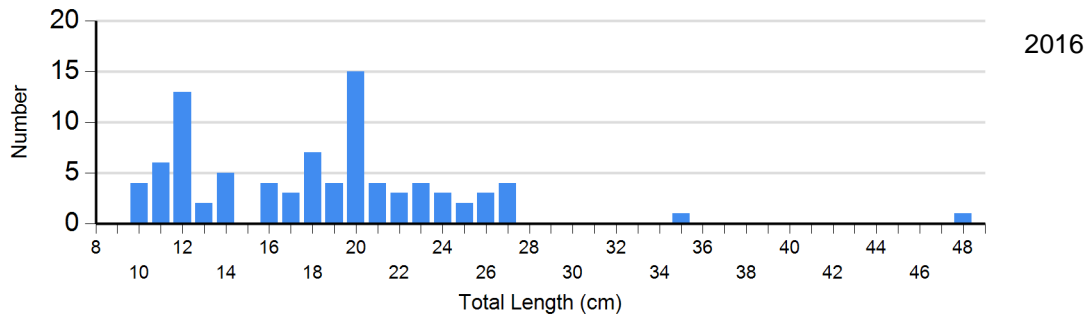
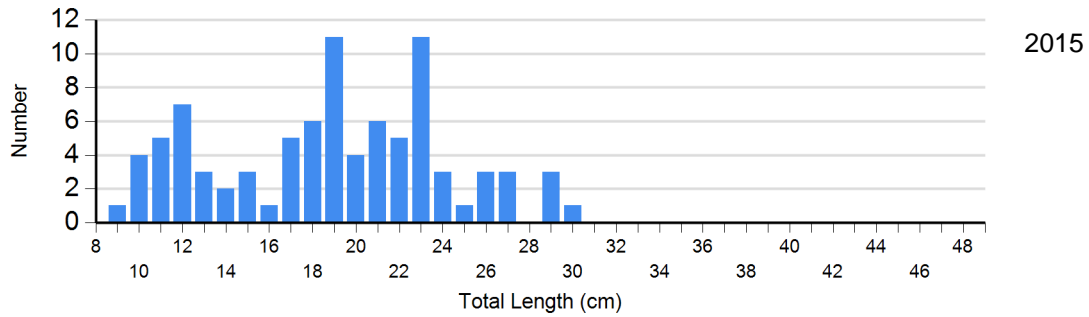
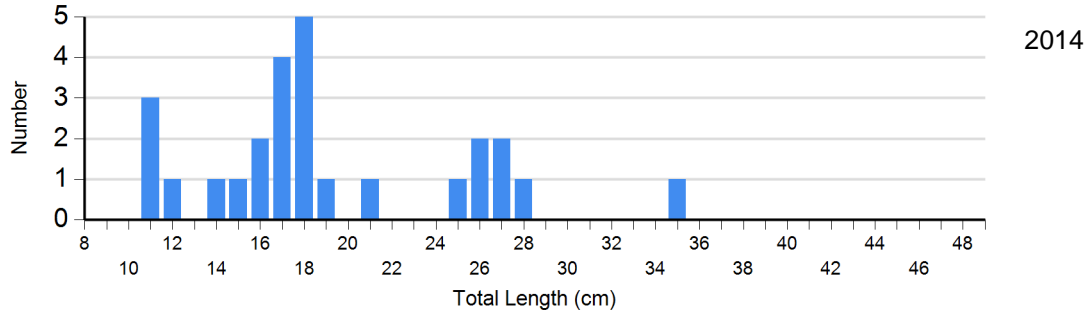
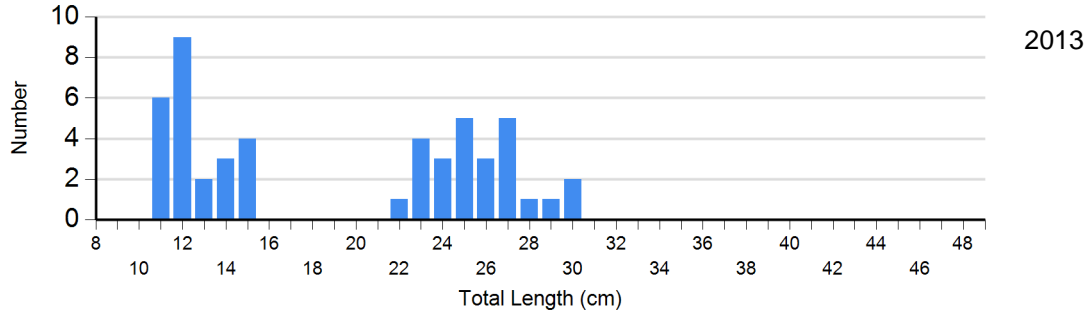
2014



Species: Yellow Perch
 Gear: AFS std gill net



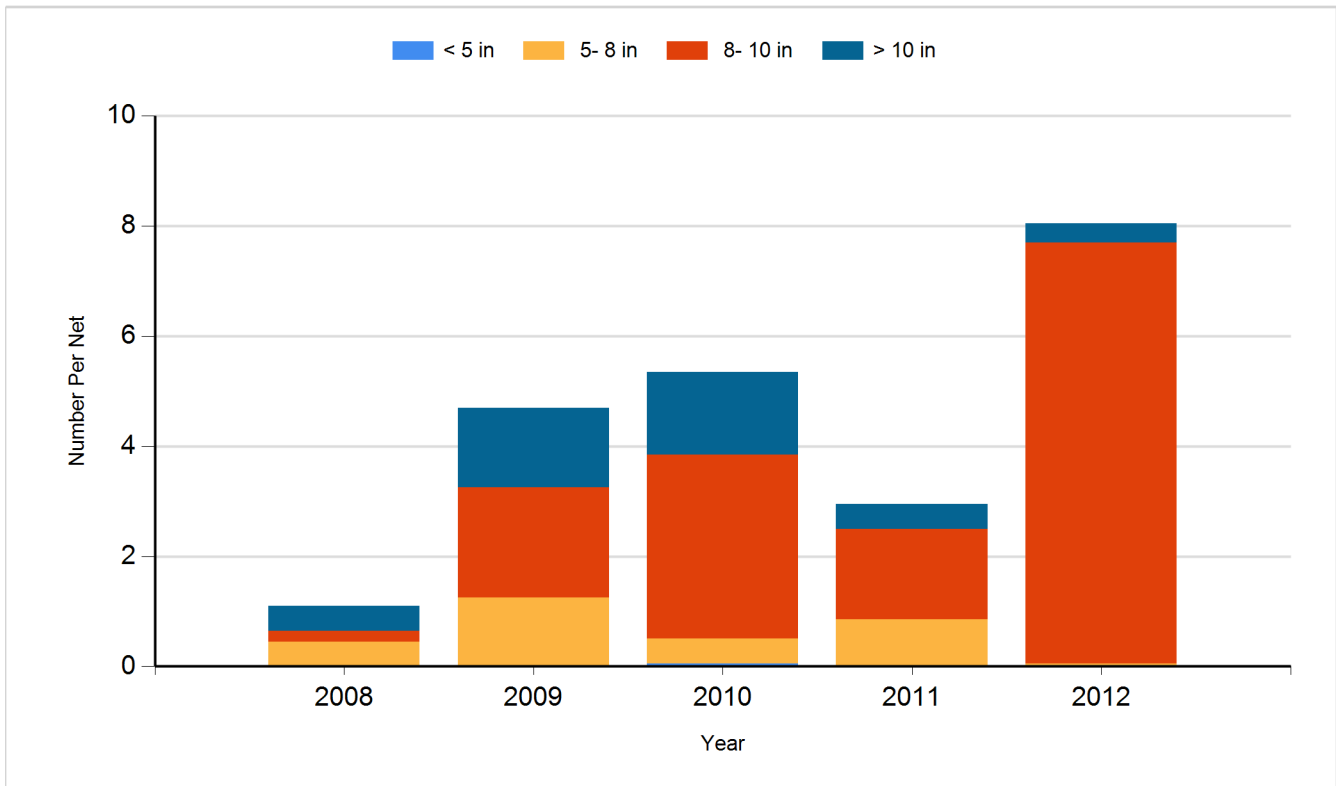
Species: Yellow Perch
Gear: std exp gill net



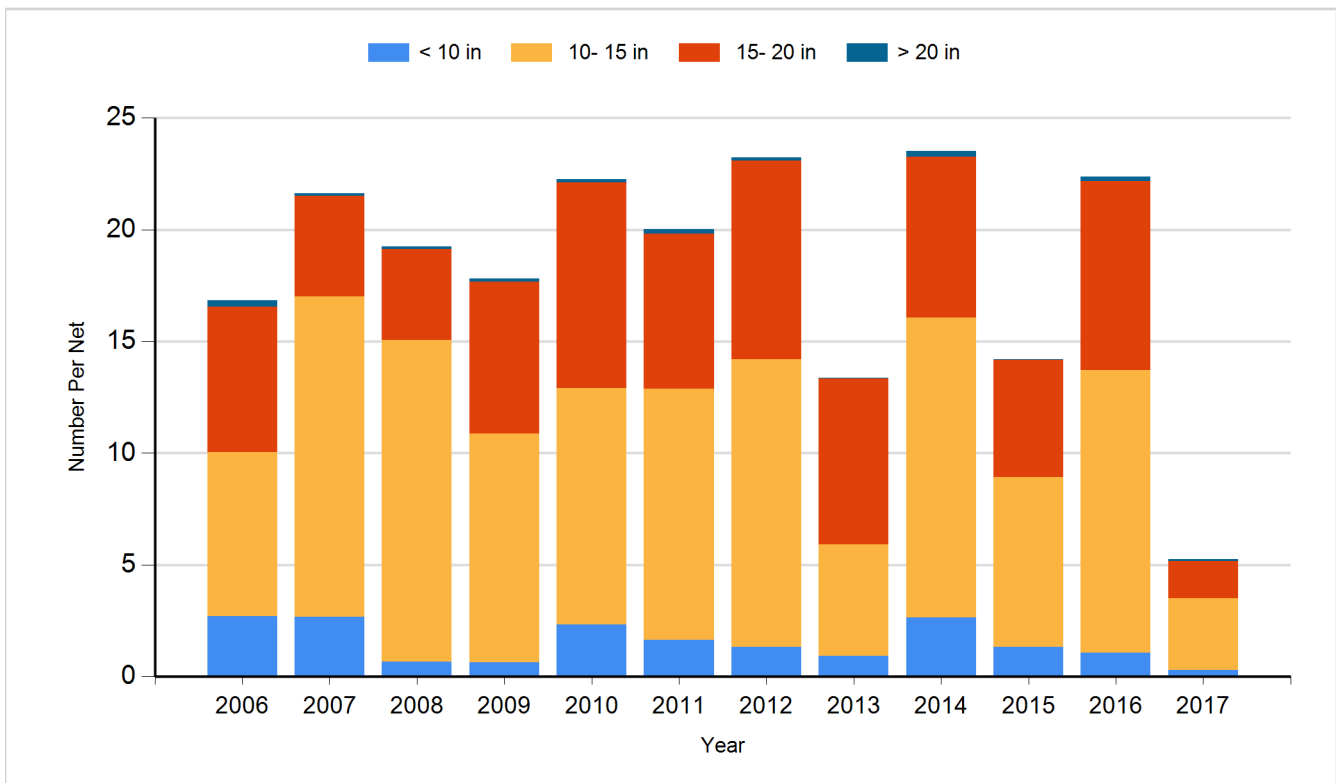
Historic Fish Sizes and Relative Abundance

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

Species: Black Crappie
Gear: Frame Net



Species: Walleye
Gear: Gill Net



Species: Yellow Perch
Gear: Gill Net

