SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Lewis and Clark, Yankton County
LCL-Lake-73-000
2017

Lake Information

Name: Lewis and Clark

County: Yankton

Surface Area: 48,774 Acres

Surveys and Investigations

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

Gear	Date	Effort
AFS gill net (1/2 inch)	September 19, 2017	18 net-nights
AFS gill net (1/2 inch)	September 20, 2017	18 net-nights
AFS std gill net	September 19, 2017	18 net-nights
AFS std gill net	September 20, 2017	18 net-nights
boat shocker (night)	May 23, 2017	3600 seconds
fall night EF-WAE	October 11, 2017	4200 seconds
std seine	July 24, 2017	12 hauls

Common Fish Species Present

Smallmouth Bass

Walleye

Channel Catfish

Largemouth Bass

Freshwater Drum

River Carpsucker

Gizzard Shad

Smallmouth Buffalo

Sauger

Flathead Catfish

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 gill net (1/2 inch)	Channel Catfish	0.0	0.0	0		0		82	
	Freshwater Drum	0.0	0.0	0		0			
	Gizzard Shad	0.0	0.0	0					
	Sauger	0.1	0.1	0		0		74	2
	Walleye	0.0	0.0	0		0			
AFS std gill net	Channel Catfish	4.2	0.6	84	4	29	5	92	1
	Common Carp	0.1	0.1	75		75		107	7
	Flathead Catfish	0.1	0.1	40		0		88	3
	Freshwater Drum	1.9	0.4	80	7	63	8	96	1
	Gizzard Shad	0.3	0.1	27				98	6
	River Carpsucker	0.6	0.2	100		95		92	2
	Sauger	0.2	0.1	100		100		80	5
	Shorthead Redhorse	0.1	0.1	75		50		98	7
	Shortnose Gar	0.0	0.0						
	Smallmouth Bass	0.0	0.0	0		0		99	
	Smallmouth Buffalo	0.3	0.1	100		89		79	4
	Walleye	0.6	0.2	57	16	30	15	84	1
	White Bass	0.1	0.1	100		75		102	3
	Yellow Perch	0.1	0.1	100		33		88	7
boat shocker (night)	Largemouth Bass	4.0	7.5	50		25		97	9
	Smallmouth Bass	25.0	21.0	20	13	0		102	2
fall night EF-WAE	Sauger	0.0	0.0						
	Walleye	18.0	9.4					75	6
std seine	Black Crappie	0.0	0.0	0		0			
	Bluegill	0.0	0.0	0		0			
	Channel Catfish	0.0	0.0	0		0			
	Emerald Shiner	0.0	0.0						
	Freshwater Drum	0.0	0.0	0		0			
	Gizzard Shad	0.0	0.0	0					
	Johnny Darter	0.0	0.0						
	Largemouth Bass	0.0	0.0	0		0			
	River Carpsucker	0.0	0.0	0		0			
	Rock Bass	0.0	0.0	0		0			

		Abundance		Stock Density Indices				Condition	
Gear	Species	CPUE	CI-80	PSD	CI-80	PSD-P	CI-80	Wr	CI-80
std seine	Smallmouth Bass	0.0	0.0	0		0			
	Smallmouth Buffalo	0.0	0.0	0		0			
	White Bass	0.0	0.0	0		0			
	White Crappie	0.0	0.0	0		0			
	Yellow Perch	0.0	0.0	0		0			

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 gill net (1/2 inch)	Channel Catfish										0.0	0.0
	Freshwater Drum										0.0	0.0
	Gizzard Shad										0.0	0.0
	Sauger										0.1	0.1
	Walleye										0.0	0.0
AFS std gill net	Channel Catfish										4.2	4.2
	Common Carp										0.1	0.1
	Flathead Catfish										0.1	0.1
	Freshwater Drum										1.9	1.9
	Gizzard Shad										0.3	0.3
	River Carpsucker										0.6	0.6
	Sauger										0.2	0.2
	Shorthead Redhorse										0.1	0.1
	Shortnose Gar										0.0	0.0
	Smallmouth Bass										0.0	0.0
	Smallmouth Buffalo										0.3	0.3
	Walleye										0.6	0.6
	White Bass										0.1	0.1
	Yellow Perch										0.1	0.1
boat shocker (night)	Largemouth Bass									0.0	4.0	2.0
	Sauger									4.3		4.3
	Smallmouth Bass	69.0	37.2		54.6	25.0	94.0	53.0	30.0	7.1	25.0	43.9
	Walleye									15.0		15.0
electrofishing (flathead)	Flathead Catfish	14.6	6.3		16.3	8.8	11.7					11.5
fall night EF-WAE	Sauger	10.4	0.0		0.0	0.0	0.0	0.5	0.0		0.0	1.4
	Walleye	83.5	24.5		6.5	51.5	48.0	30.0	12.0	56.0	18.0	36.7
large seine	Black Crappie					0.0						0.0
	Bluegill					0.0						0.0
	Channel Catfish					0.0						0.0
	Emerald Shiner					0.0						0.0
	Fathead Minnow					0.0						0.0
	Flathead Catfish					0.0						0.0
	Freshwater Drum					0.0						0.0

		CPUE										
Gear	Species	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Avg
large seine	Johnny Darter					0.0						0.0
	Largemouth Bass					0.0						0.0
	Red Shiner					0.0						0.0
	River Carpsucker					0.0						0.0
	Shorthead Redhorse					0.0						0.0
	Smallmouth Bass					0.0						0.0
	Spotfin Shiner					0.0						0.0
	White Bass					0.0						0.0
	Yellow Perch					0.0						0.0
rod and reel	Largemouth Bass						5,220.0					5220.0
	Smallmouth Bass						2,100.0					2100.0
small seine	Black Crappie									0.0		0.0
	Bluegill									0.0		0.0
	Bluntnose Minnow									0.0		0.0
	Brassy Minnow									0.0		0.0
	Channel Catfish									0.0		0.0
	Common Carp									0.0		0.0
	Gizzard Shad									0.0		0.0
	Johnny Darter									0.0		0.0
	Largemouth Bass									0.0		0.0
	None									0.0		0.0
	Orangespotted Sunfish									0.0		0.0
	River Carpsucker									0.0		0.0
	Shorthead Redhorse									0.0		0.0
	Smallmouth Bass									0.0		0.0
	Smallmouth Buffalo									0.0		0.0
	Spotfin Shiner									0.0		0.0
	Spottail Shiner									0.0		0.0
	Walleye									0.0		0.0
	White Bass									0.0		0.0
	White Sucker									0.0		0.0
	Yellow Perch									0.0		0.0
std exp gill net	Bigmouth Buffalo	0.2	0.1									0.2
	Black Crappie					0.2						0.2
	Channel Catfish	4.9	3.3		0.5	4.1	6.8	3.2	6.3	4.0		4.1

		CPUE										
Gear	Species	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Avg
std exp gill net	Common Carp	0.5	0.7		0.1	0.2	0.6	0.2	0.3	0.2		0.4
	Flathead Catfish				0.0			0.1	0.0	0.1		0.1
	Freshwater Drum	2.0	2.8		3.6	0.8	1.1	0.8	0.3	1.3		1.6
	Gizzard Shad	0.0	0.0			1.2	0.1	0.3	1.0	8.0		1.5
	Goldeye				0.0	0.0						0.0
	Northern Pike					0.3						0.3
	Paddlefish	0.3										0.3
	River Carpsucker	2.2	0.3		0.3	0.8	1.1	0.6	2.9	0.3		1.1
	Rock Bass				0.3							0.3
	Sauger	7.3	6.9		2.7	1.8	2.7	2.1	1.9	2.5		3.5
	Shorthead Redhorse	2.3	1.3		0.1	0.9	2.9	2.5	1.3	0.8		1.5
	Shortnose Gar	0.0				0.0	0.0	0.0	0.0	0.0		0.0
	Shovelnose Sturgeon				0.0							0.0
	Smallmouth Bass								0.1			0.1
	Smallmouth Buffalo	0.1	0.1			0.3	0.3		0.3	0.0		0.2
	Walleye	11.9	9.8		2.3	4.3	3.1	2.1	2.1	3.3		4.9
	White Bass	1.8	0.3			0.1	0.0	0.4	0.3	0.8		0.5
	White Crappie	0.2	0.3			0.1	0.2		0.0	0.0		0.1
	Yellow Perch	0.1				0.3	1.3	1.2	0.4	0.3		0.6
std seine	Bigmouth Buffalo	0.0			0.0			0.0	0.0	0.0		0.0
	Black Crappie		0.0		0.0			0.0	0.0	0.0	0.0	0.0
	Bluegill		0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
	Bluntnose Minnow				0.0							0.0
	Central Stoneroller		0.0									0.0
	Channel Catfish		0.0		0.0		0.0		0.0	0.0	0.0	0.0
	Common Carp	0.0					0.0			0.0		0.0
	Common Shiner		0.0									0.0
	Emerald Shiner	0.0	0.0		0.0		0.0	0.0	0.0		0.0	0.0
	Fathead Minnow				0.0		0.0					0.0
	Freshwater Drum	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
	Gizzard Shad	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
	Golden Shiner							0.0				0.0
	Goldeye				0.0							0.0
	Green Sunfish									0.0		0.0
	Johnny Darter	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
	Largemouth Bass				0.0		0.0	0.0	0.0	0.0	0.0	0.0

		CPUE										
Gear	Species	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Avg
std seine	None									0.0		0.0
	Northern Pike				0.0							0.0
	Red Shiner	0.0	0.0		0.0							0.0
	River Carpsucker	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
	Rock Bass										0.0	0.0
	Sand Shiner							0.0				0.0
	Sauger	0.0	0.0		0.0			0.0				0.0
	Shorthead Redhorse		0.0		0.0							0.0
	Shortnose Gar		0.0									0.0
	Silver Chub				0.0							0.0
	Smallmouth Bass	0.0	0.0					0.0			0.0	0.0
	Smallmouth Buffalo				0.0		0.0	0.0		0.0	0.0	0.0
	Spotfin Shiner	0.0	0.0		0.0		0.0		0.0	0.0		0.0
	Spottail Shiner	0.0	0.0		0.0		0.0					0.0
	Walleye	0.0	0.0		0.0		0.0	0.0		0.0		0.0
	White Bass	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
	White Crappie				0.0			0.0	0.0		0.0	0.0
	Yellow Perch				0.0		0.0	0.0		0.0	0.0	0.0

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 gill net (1/2 inch)	Walleye	PSD										0
		PSD-P										0
AFS std gill net	Walleye	PSD										57
		PSD-P										30
		Wr										84
	Yellow Perch	PSD										100
		PSD-P										33
		Wr										88
boat shocker (night)	Walleye	PSD									74	
		PSD-P									21	
fall night EF-WAE	Walleye	Wr	81								82	75
large seine	Black Crappie	PSD					0					
		PSD-P					0					
	Yellow Perch	PSD					0					
		PSD-P					0					
small seine	Black Crappie	PSD									0	
		PSD-P									0	
	Walleye	PSD									0	
		PSD-P									0	
	Yellow Perch	PSD									0	
		PSD-P									0	
std exp gill net	Black Crappie	PSD					100					
		PSD-P					50					
		Wr					94					
	Northern Pike	PSD					0					
		PSD-P					0					
		Wr					95					
	Walleye	PSD	64	54		71	83	59	48	44	68	
		PSD-P	16	10		14	6	16	0	0	15	

			Year									
Gear	Species	Index	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
std exp gill net	Walleye	Wr	91	82		81	83	85	90	85	96	
	Yellow Perch	PSD	100				0	6	50	100	100	
		PSD-P	0				0	0	14	100	67	
		Wr	91				84	90	91	94	93	
std seine	Black Crappie	PSD		0		0			0	0	0	0
		PSD-P		0		0			0	0	0	0
	Northern Pike	PSD				0						
		PSD-P				0						
	Walleye	PSD	0	0		0		0	0		0	
		PSD-P	0	0		0		0	0		0	
	Yellow Perch	PSD				0		0	0		0	0
		PSD-P				0		0	0		0	0

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	26	284 (12)	401 (3)	475 (1)	493 (1)	530 (5)		603 (1)	531 (2)		524 (1)
2016	40	350 (12)	415 (10)	495 (4)	445 (7)	537 (1)		584 (2)	471 (3)	523 (1)	
2015	27	287 (12)	369 (5)	418 (4)	467 (2)	434 (1)	460 (1)	470 (2)			
2014	25	301 (6)	377 (12)	417 (3)		422 (1)	495 (1)	443 (1)	433 (1)		
2013	37	293 (9)	381 (9)	466 (1)	439 (3)	461 (8)	523 (5)	475 (1)			530 (1)
2012	53	300 (6)	369 (4)	416 (13)	453 (18)	457 (7)	444 (1)	477 (1)	541 (1)		552 (2)
2011	28		341 (7)	405 (9)	460 (9)	497 (1)	513 (1)		628 (1)		
2009	124	279 (44)	399 (53)	419 (6)	516 (6)	495 (4)	507 (2)	547 (3)		522 (1)	521 (5)
2008	143	335 (51)	428 (23)	494 (37)	487 (15)	529 (6)	493 (6)	485 (1)	523 (1)		504 (3)

Fish Condition

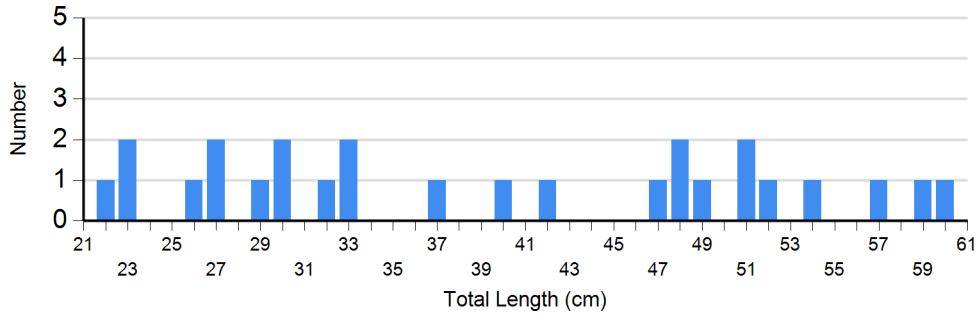
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Walleye Gill Net	2013	15	85 (1.6)	16	86 (1.1)	6	85 (2.1)	0	
	2014	13	91 (2.3)	12	88 (1.9)	0		0	
	2015	14	86 (2.1)	11	83 (1.3)	0		0	
	2016	13	97 (2.2)	21	96 (1.7)	6	94 (2.4)	0	
	2017	10	84 (1.5)	6	82 (1.9)	7	86 (1.0)	0	
Yellow Perch Gill Net	2013	15	89 (2.4)	1	102	0		0	
	2014	7	89 (1.9)	5	92 (1.2)	2	93 (1.7)	0	
	2015	0		0		5	94 (2.7)	0	
	2016	0		1	88	2	95 (2.0)	0	
	2017	0		2	83 (3.8)	0		1	98

Length Frequency Distribution

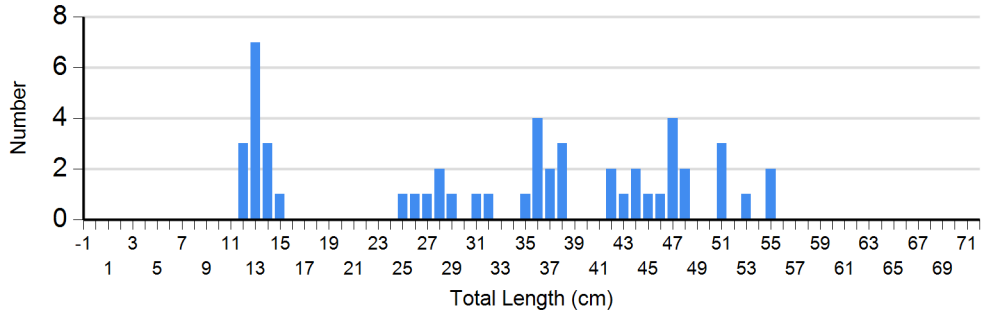
Length frequency histogram of species sampled by year.

Species: Walleye
Gear: AFS std gill net

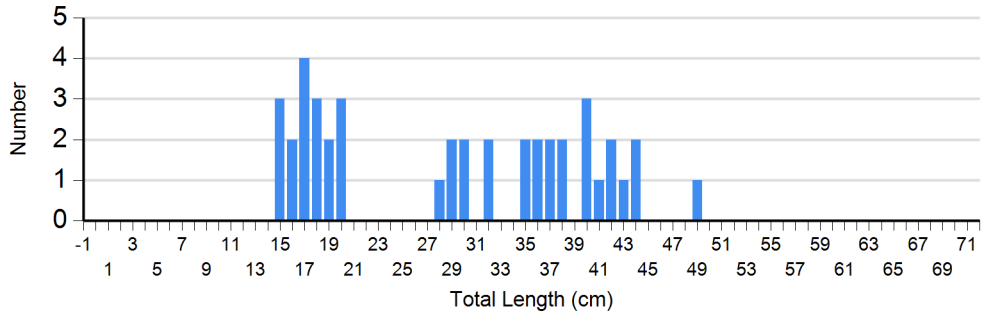


2017

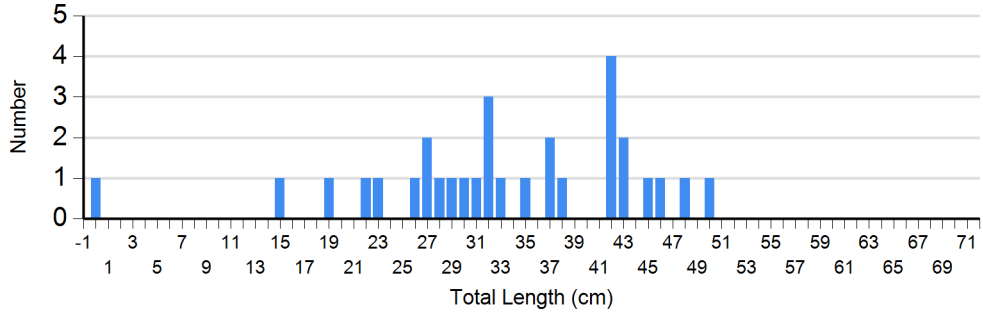
Species: Walleye
Gear: std exp gill net



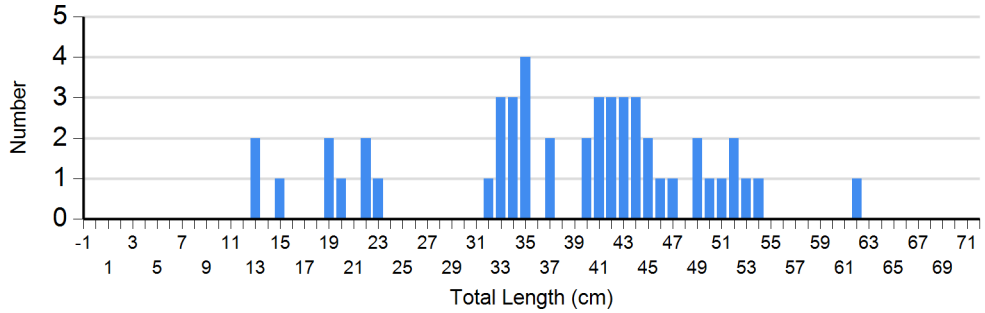
2013



2014

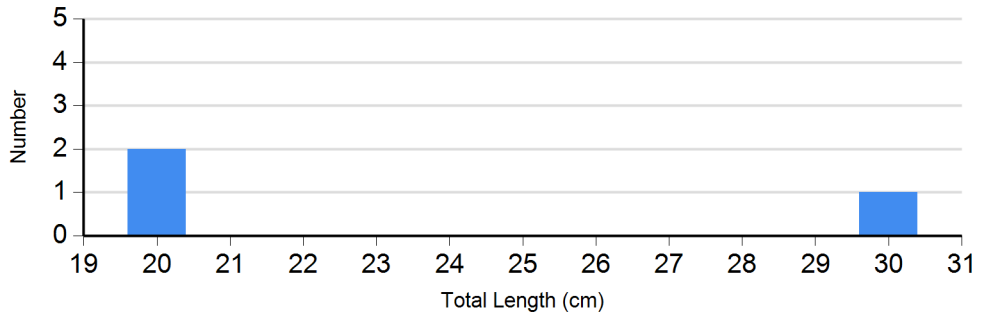


2015



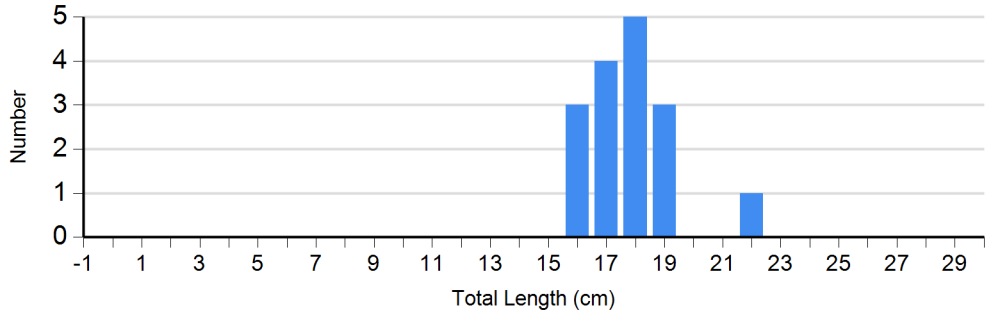
2016

Species: Yellow Perch
Gear: AFS std gill net

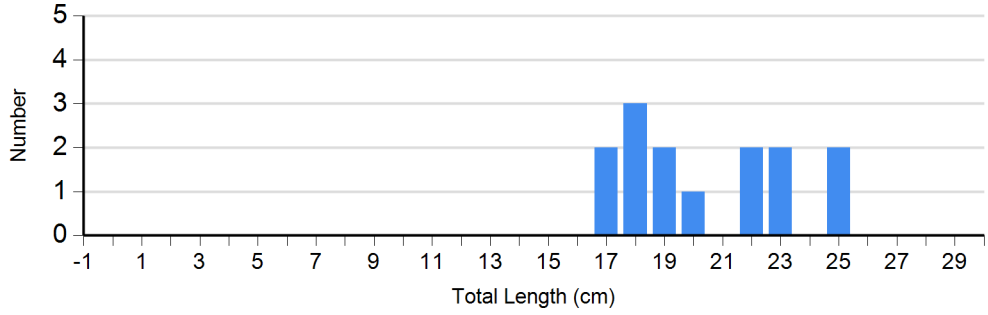


2017

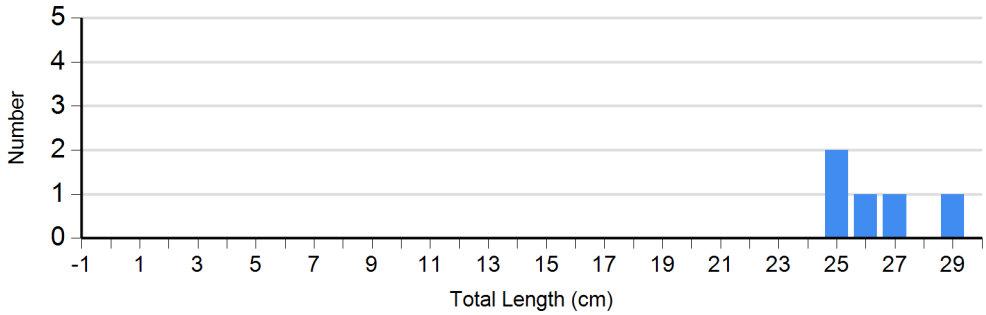
Species: Yellow Perch
Gear: std exp gill net



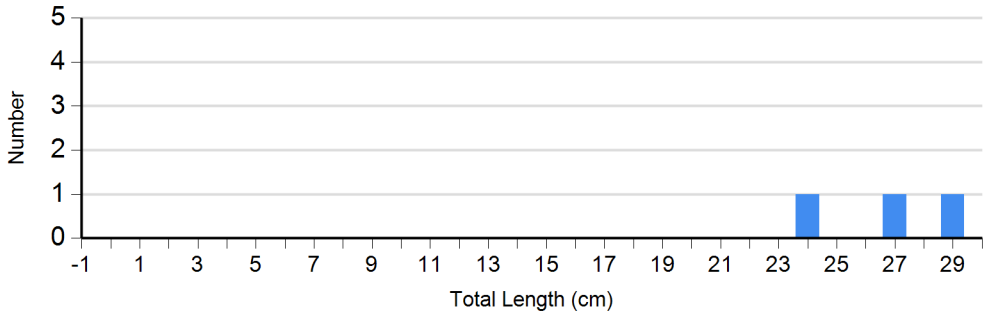
2013



2014


Number
5
4
3
2
1
0
-1 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29
Total Length (cm)

2015

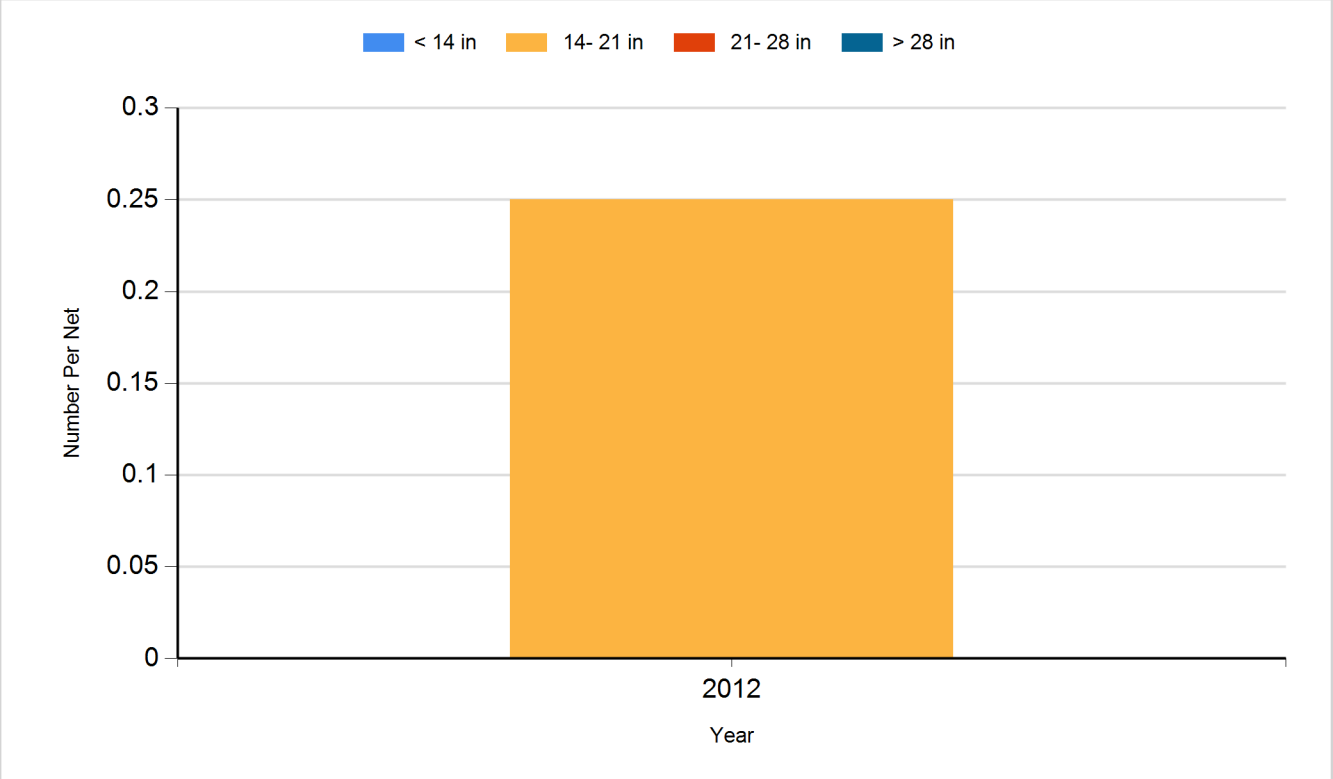

Number
5
4
3
2
1
0
-1 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29
Total Length (cm)

2016

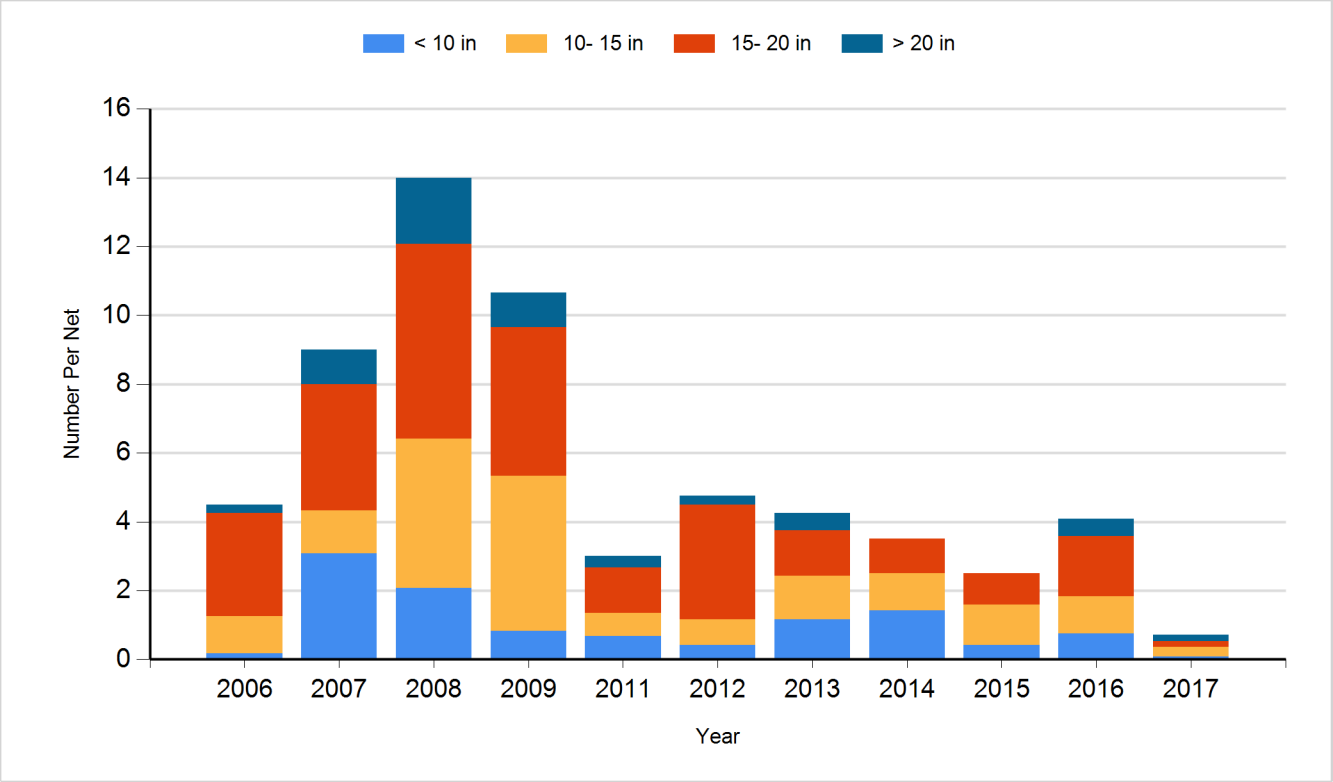
Historic Fish Sizes and Relative Abundance

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

Species: Northern Pike
Gear: Gill Net



Species: Walleye
Gear: Gill Net



Species: Yellow Perch
Gear: Gill Net