SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Durkee, Meade County
CHE-Lake-516-000
2017

Lake Information

Name: Durkee

County: Meade

Surface Area: 108 Acres

Surveys and Investigations

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

Gear	Date	Effort
boat shocker (night)	May 31, 2017	3600 seconds
std exp gill net	June 13, 2017	4 net-nights
std frame net (3/8 inch)	June 13, 2017	7 net-nights

Common Fish Species Present

Yellow Perch

Northern Pike

Largemouth Bass

Bluegill

Black Crappie

Black Bullhead

White Bass

Golden Shiner

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
boat shocker (night)	Largemouth Bass	59.0	26.6	81	8	31	9	106	2
std exp gill net	Black Bullhead	10.0	2.9	88		0		92	3
	Black Crappie	0.3	0.4	0		0		103	
	Golden Shiner	0.0	0.0						
	Northern Pike	2.3	1.7	89		33		91	3
	White Bass	0.5	0.5	100		100		96	1
	Yellow Perch	5.0	0.0	40	18	0		91	3
std frame net (3/8 inch)	Black Bullhead	27.0	9.6	89	3	0		89	1
	Black Crappie	9.4	5.7	55	9	0		107	5
	Bluegill	9.7	2.7	78	7	7		106	2
	Golden Shiner	0.0	0.0						
	Largemouth Bass	0.3	0.4	100		0		110	4
	Northern Pike	0.6	0.4	50		50		95	1
	Yellow Perch	1.9	1.3	85		0		88	3

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
boat shocker (night)	Largemouth Bass							28.2	22.5	47.1	59.0	39.2
boat shocker (night, AC	Largemouth Bass	10.0	51.3									30.7
frame net (1/2 inch)	Black Bullhead	74.0		490.5								282.3
	Black Crappie			0.3								0.3
	Bluegill			12.3								12.3
	Largemouth Bass			0.3								0.3
	Northern Pike	2.6		1.8								2.2
	Yellow Perch	1.8		3.5								2.7
frame net (std 3/4 in)	Black Bullhead				162.5	234.9	370.9	228.4	162.4	42.8		200.3
	Black Crappie				2.6	4.4	96.4	73.4	10.3	23.9		35.2
	Bluegill				96.9	223.1	82.0	45.0	12.1	85.5		90.8
	Channel Catfish							0.1				0.1
	Green Sunfish								0.3			0.3
	Largemouth Bass					0.6			0.1			0.4
	Northern Pike				0.5	2.0	0.6	0.3	0.0	1.5		0.8
	Yellow Perch				0.8	3.6	1.3	2.4	18.6	3.4		5.0
spring night EF-LMB	Largemouth Bass				30.0	54.0						42.0
std exp gill net	Black Bullhead	13.0		5.0						17.0	10.0	11.3
	Black Crappie			0.0						7.0	0.3	2.4
	Bluegill			2.0								2.0
	Golden Shiner									0.0	0.0	0.0
	Northern Pike	6.0		6.0						6.0	2.3	5.1
	White Bass										0.5	0.5
	Yellow Perch	5.0		0.0						30.0	5.0	10.0
std exp gill net (150 ft)	Black Bullhead				34.0	57.0	82.5	27.0	32.0			46.5
	Black Crappie				0.5	1.5	4.0	42.0	1.0			9.8
	Bluegill				0.5		0.5		1.0			0.7
	Channel Catfish								0.5			0.5
	Golden Shiner								0.0			0.0
	Northern Pike				4.0	3.0	8.5	2.5	1.0			3.8
	Yellow Perch				2.5	9.0	12.0	36.0	54.0			22.7
std frame net (3/8 inch)	Black Bullhead										27.0	27.0

		CPUE										
Gear	Species	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Avg
std frame net (3/8 inch)	Black Crappie										9.4	9.4
	Bluegill										9.7	9.7
	Golden Shiner										0.0	0.0
	Largemouth Bass										0.3	0.3
	Northern Pike										0.6	0.6
	Yellow Perch										1.9	1.9

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
frame net (1/2 inch)	Black Crappie	PSD			100							
		PSD-P			0							
		Wr			83							
	Northern Pike	PSD	92		43							
		PSD-P	8		29							
		Wr	92		86							
	Yellow Perch	PSD	78		100							
		PSD-P	11		57							
		Wr	112		95							
frame net (std 3/4 in)	Black Crappie	PSD				0	6	10	7	6	38	
		PSD-P				0	0	1	0	0	1	
		Wr				106	99	100	98	126	105	
	Northern Pike	PSD				75	100	100	100	0	58	
		PSD-P				50	29	60	50	0	8	
		Wr				94	89	85	94		84	
	Yellow Perch	PSD				67	12	20	0	46	48	
		PSD-P				67	12	0	0	0	4	
		Wr				91	98	96	91	102	89	
std exp gill net	Black Crappie	PSD			0						14	0
		PSD-P			0						0	0
		Wr									109	103
	Northern Pike	PSD	83		0						67	89
		PSD-P	0		0						17	33
		Wr	94		98						94	91
	Yellow Perch	PSD	40		0						23	40
		PSD-P	0		0						0	0
		Wr	117								92	91
std exp gill net (150 ft)	Black Crappie	PSD				0	0	0	92	0		
		PSD-P				0	0	0	0	0		
		Wr				111	94	124	95	125		
	Northern Pike	PSD				50	100	100	100	100		

			Year									
Gear	Species	Index	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
std exp gill net (150 ft)	Northern Pike	PSD-P				0	0	35	20	100		
		Wr				95	92	95	98	94		
	Yellow Perch	PSD				0	0	4	0	15		
		PSD-P				0	0	4	0	0		
		Wr				91	97	95	96	102		
std frame net (3/8 inch)	Black Crappie	PSD										55
		PSD-P										0
		Wr										107
	Northern Pike	PSD										50
		PSD-P										50
		Wr										95
	Yellow Perch	PSD										85
		PSD-P										0
		Wr										88

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+
2016	380		162 (74)	197 (251)	185 (8)	214 (13)	225 (35)				
2014	1174		147 (14)	181 (1082)	205 (70)	222 (8)					

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	60		131 (2)	175 (40)	204 (4)	215 (8)	216 (6)				
2014	228	103 (90)	149 (20)	156 (62)	165 (28)	181 (27)					

Fish Condition

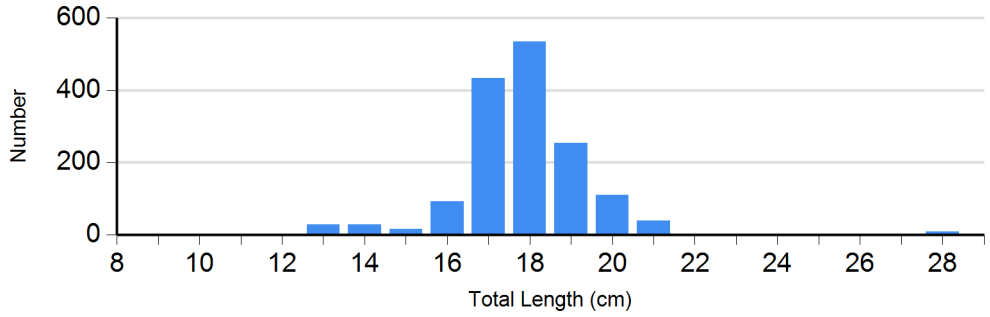
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2013	1386	101 (0.4)	148	90 (0.8)	8	77 (0.0)	0	
	2014	1096	99 (0.4)	78	90 (1.3)	0		0	
	2015	154	127 (1.0)	10	103 (1.2)	0		0	
	2016	238	106 (0.4)	142	101 (0.5)	2		0	
	2017	30	119 (8.1)	36	96 (1.0)	0		0	
Northern Pike Gill Net	2013	0		22	93 (1.4)	10	98 (1.5)	2	96 (0.0)
	2014	0		8	100 (5.3)	2	90 (0.0)	0	
	2015	0		0		2	101 (0.0)	2	87 (0.0)
	2016	4	93 (0.6)	6	97 (1.6)	2	84 (0.0)	0	
	2017	1	86	5	91 (3.4)	1	94	2	
Yellow Perch Gill Net	2013	46	95 (1.0)	0		2	84 (0.0)	0	
	2014	144	96 (0.7)	0		0		0	
	2015	184	104 (0.8)	32	93 (1.2)	0		0	
	2016	46	94 (1.1)	14	85 (2.2)	0		0	
	2017	12	93 (2.9)	8	88 (2.5)	0		0	

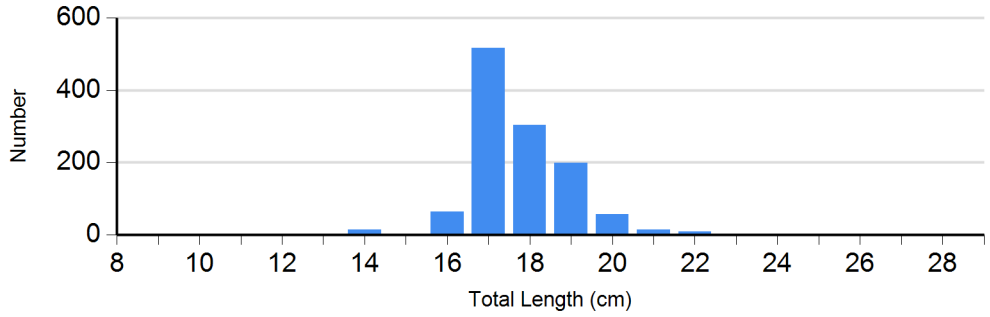
Length Frequency Distribution

Length frequency histogram of species sampled by year.

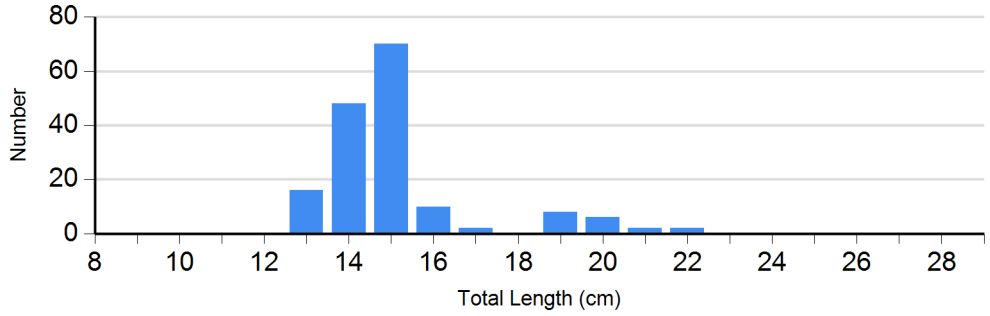
Species: Black Crappie
Gear: frame net (std 3/4 in)



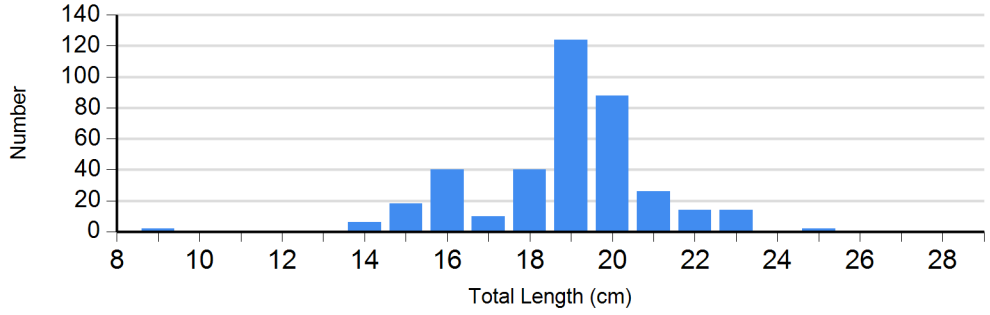
2013



2014

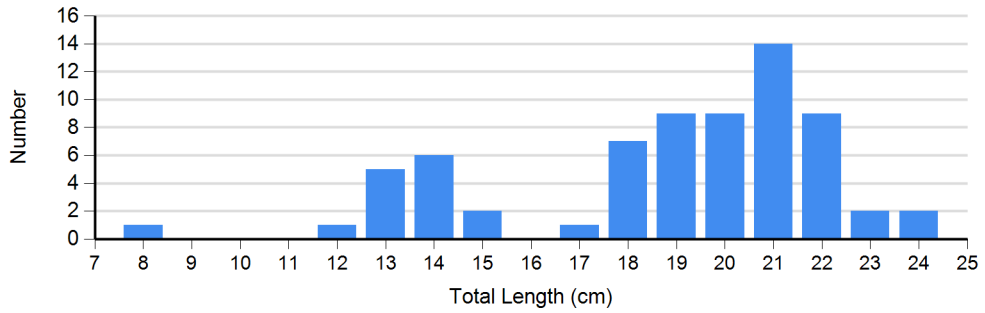


2015



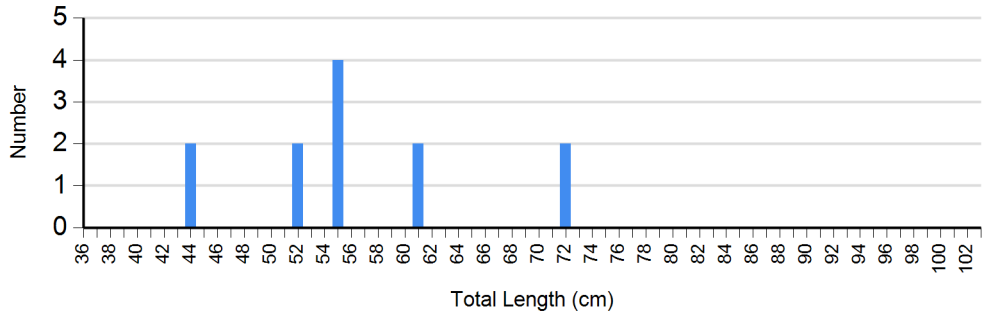
2016

Species: Black Crappie
Gear: std frame net (3/8 inch)

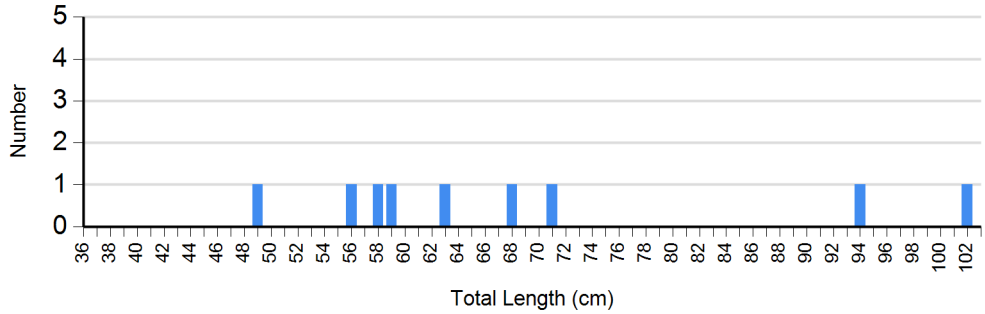


2017

Species: Northern Pike
Gear: std exp gill net

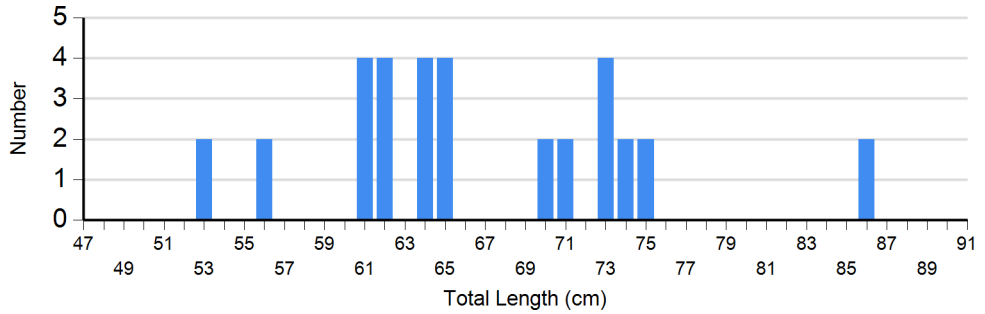


2016

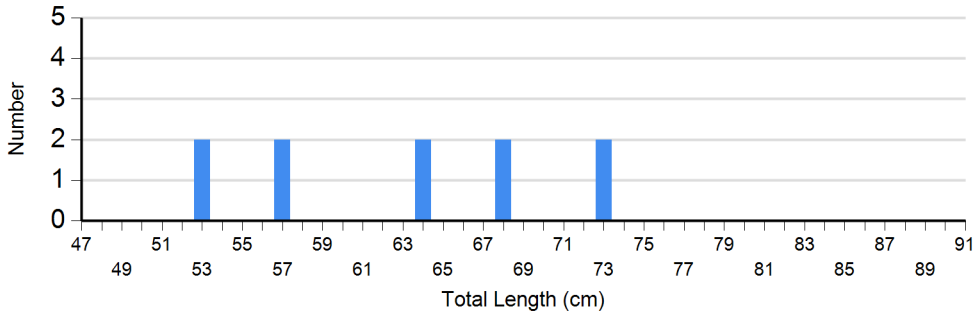


2017

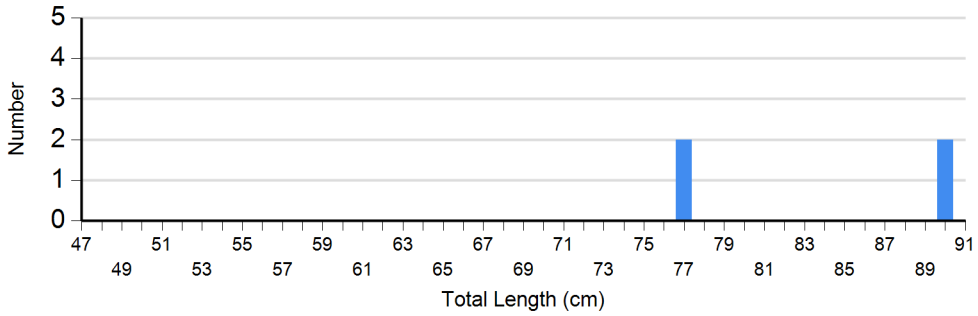
Species: Northern Pike
Gear: std exp gill net (150 ft)



2013

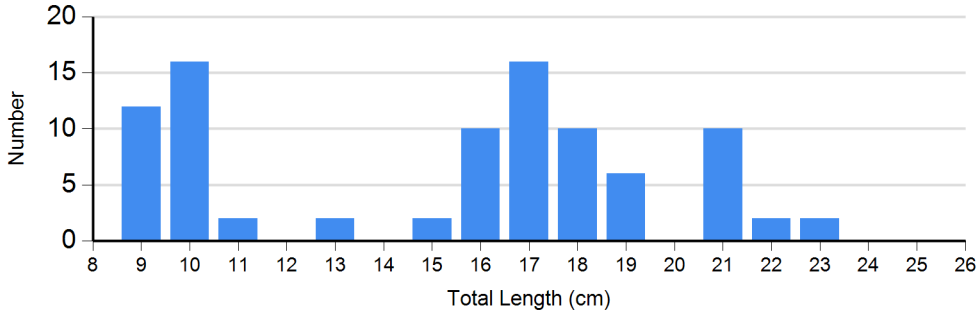


2014

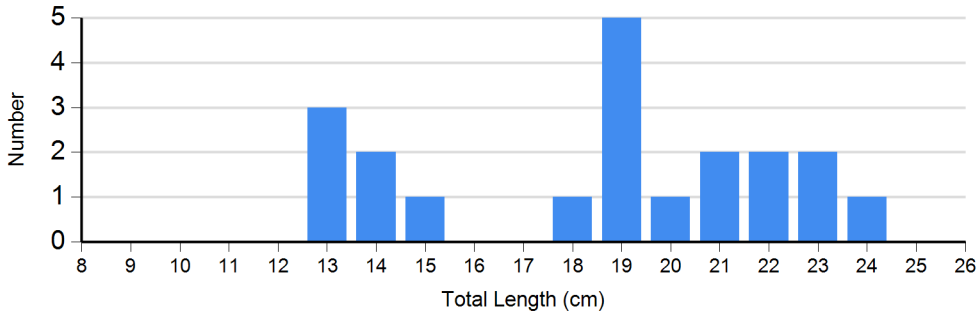


2015

Species: Yellow Perch
Gear: std exp gill net

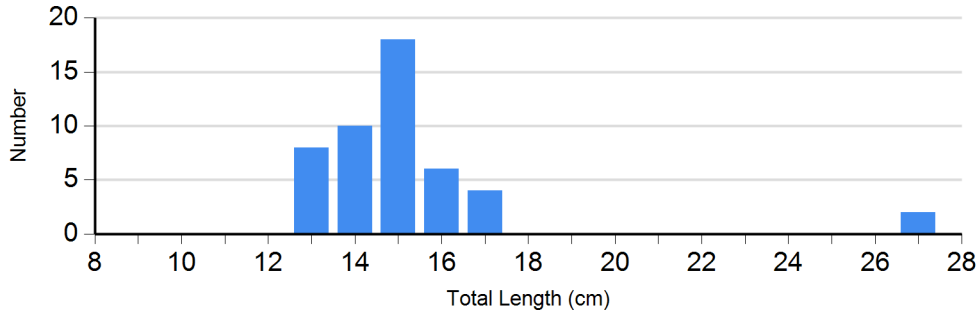


2016

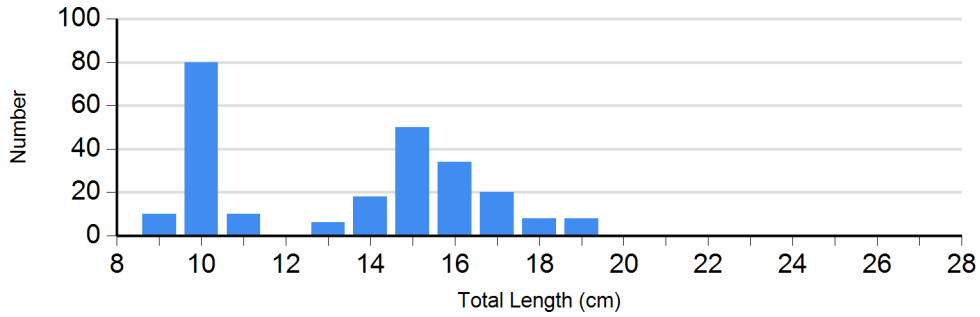


2017

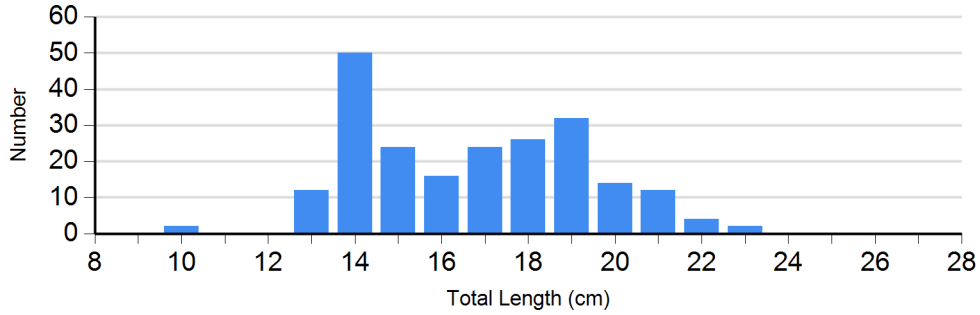
Species: Yellow Perch
Gear: std exp gill net (150 ft)



2013



2014

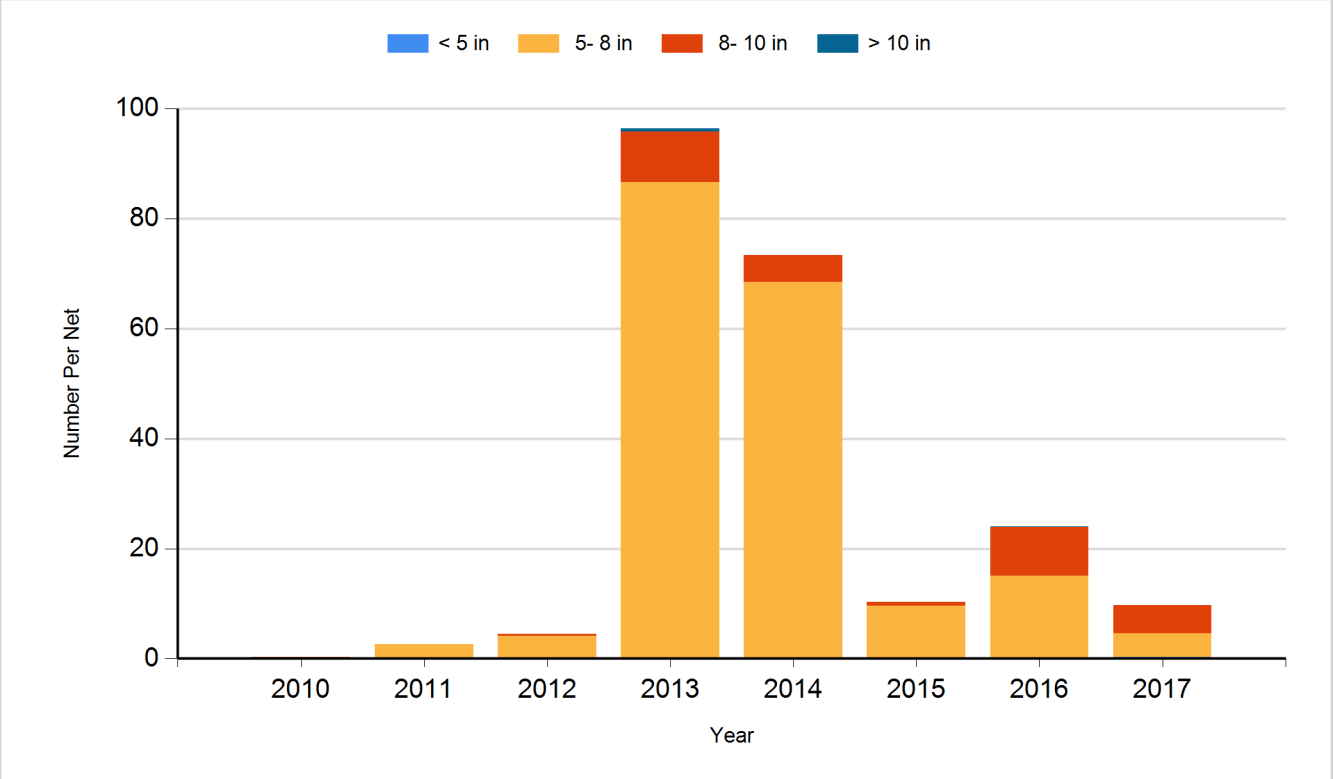


2015

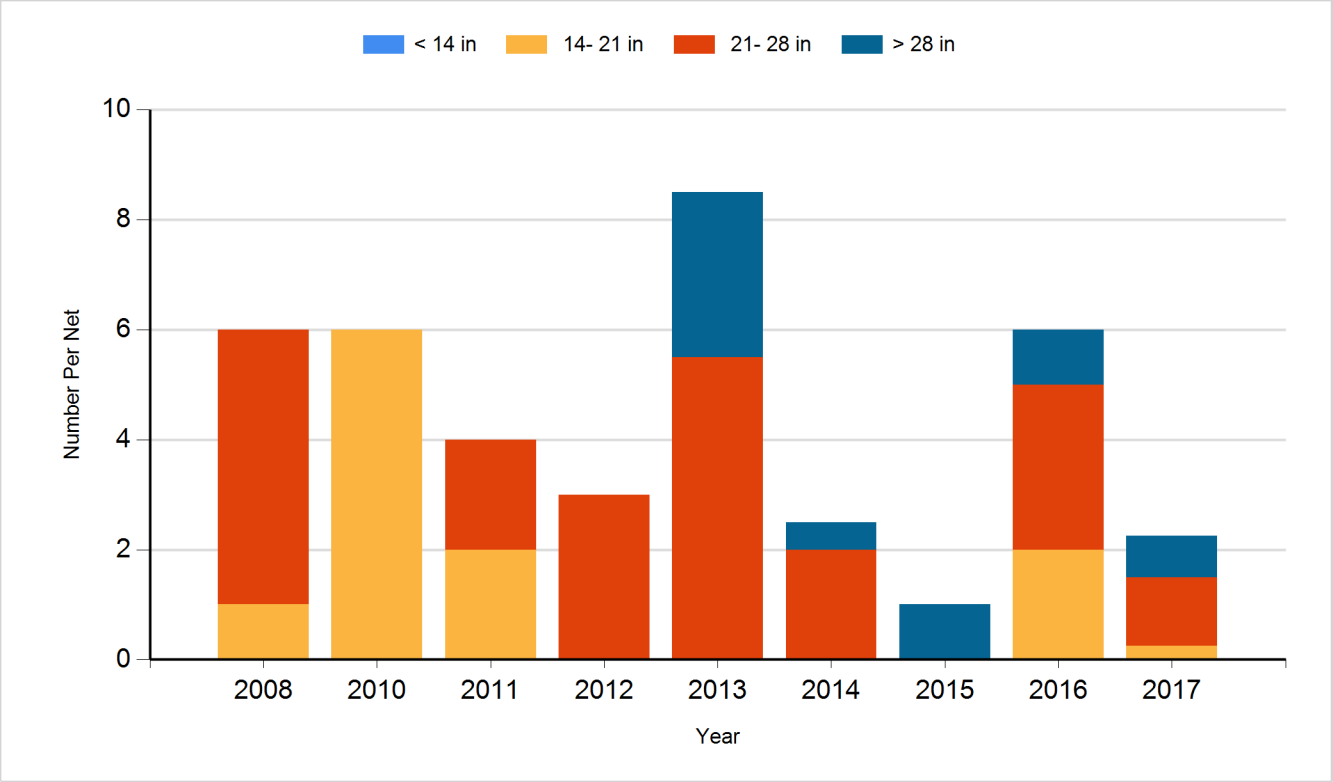
Historic Fish Sizes and Relative Abundance

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

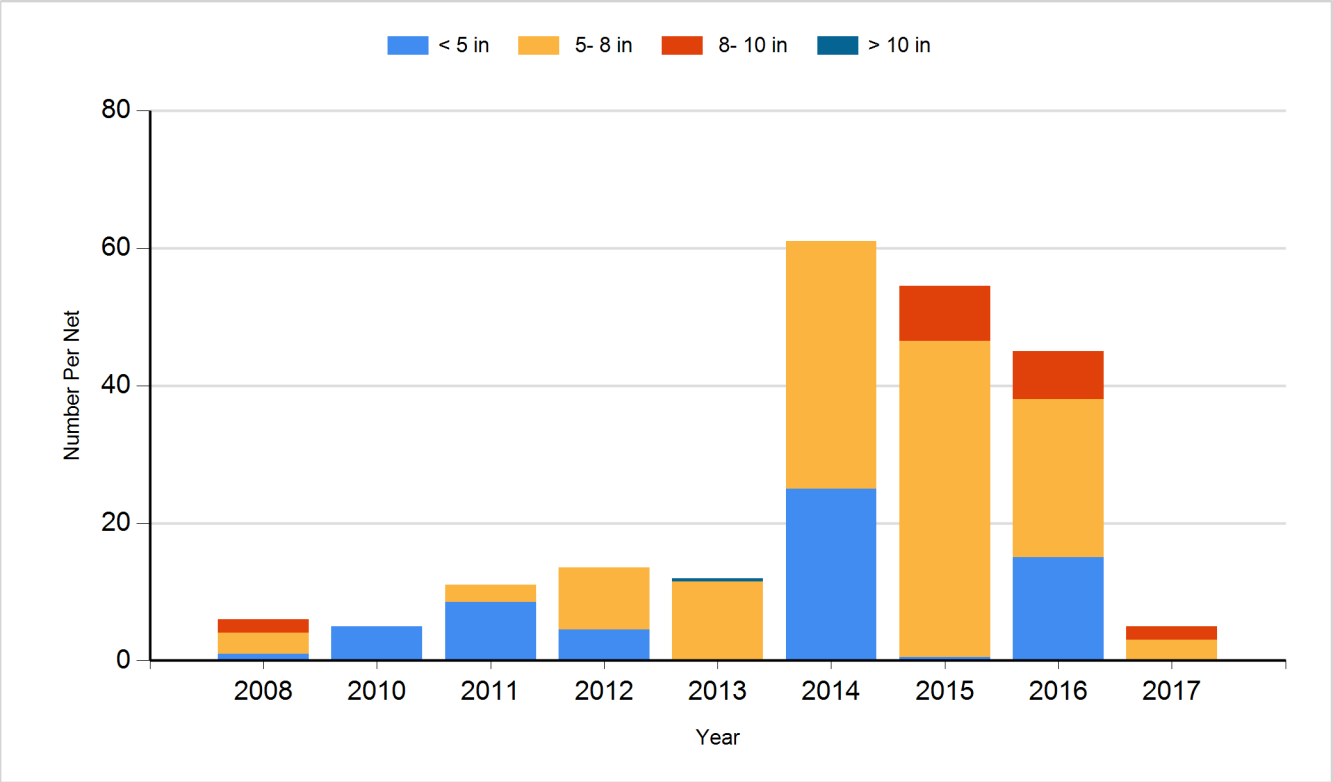
Species: Black Crappie
Gear: Frame Net



Species: Northern Pike
Gear: Gill Net



Species: Yellow Perch
Gear: Gill Net



Fish Stocking

Number of fish stocked by year, species, and size.

Year	Species	Size	Number
2008	Bluegill	Adult	50
2008	Bluegill	Fingerling	22,000
2008	Largemouth Bass	Adult	200
2008	Largemouth Bass	Fingerling	10,000
2008	Northern Pike	Fry	192,500
2009	Black Crappie	Adult	150
2009	Largemouth Bass	Juvenile	1,155
2011	Yellow Perch	Adult	400
2014	Largemouth Bass	Adult	175
2014	Largemouth Bass	Juvenile	200
2015	Largemouth Bass	Adult	112