

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Sheridan, Pennington County
MCS-Lake-11-000
2016

Lake Information

Name: Sheridan
County: Pennington
Surface Area: 370 Acres

Surveys and Investigations

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

Gear	Date	Effort
boat shocker (night)	June 22, 2016	3600 seconds
std exp gill net (150 ft)	July 13, 2016	2 net-nights

Common Fish Species Present

Largemouth Bass

Black Crappie

Rainbow Trout

Yellow Perch

White Sucker

Smallmouth Bass

Northern Pike

Rock Bass

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
boat shocker (night)	Largemouth Bass	62.0	6.3	61	9	23	8	107	2
	Smallmouth Bass	3.0	3.0	33		33		96	10
std exp gill net (150 ft)	Black Crappie	0.5	1.5	100		0		99	
	Northern Pike	1.5	4.6	67		33		104	11
	Rainbow Trout	0.0	0.0						
	Rock Bass	0.5	1.5	0		0		96	
	Smallmouth Bass	1.5	4.6	0		0		105	1
	White Sucker	3.0	9.2	100		100		102	3
	Yellow Perch	56.0	27.7	82	5	9	4	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	
boat shocker (night)	Largemouth Bass	102.0		37.3	42.0	49.5	151.5	75.0	75.0	55.0	62.0	72.1
	Smallmouth Bass								5.0	3.0	3.0	3.7
boat shocker (night, AC)	Largemouth Bass		46.0									46.0
frame net (std 3/4 in)	Black Bullhead			4.8	2.7	4.8	0.8	2.9		6.1		3.7
	Black Crappie			4.3	2.0	3.4	1.0	0.8		9.8		3.6
	Channel Catfish					0.1						0.1
	Golden Shiner					0.0	0.0			0.0		0.0
	Green Sunfish					0.4	0.3	0.5		0.6		0.5
	Largemouth Bass			0.0	0.2	0.3	0.0	0.0		0.0		0.1
	Northern Pike			0.5		0.3	0.5	0.1		0.3		0.3
	Rainbow Trout				0.0	0.0	0.0	0.0		0.0		0.0
	Rock Bass			10.7	5.8	7.0	12.8	7.9		7.8		8.7
	Rudd			6.0	4.2	7.3	1.9	1.0		3.3		4.0
	Smallmouth Bass									0.3		0.3
	White Sucker			0.7	0.2	0.4	0.6			0.1		0.4
	Yellow Perch			9.2	5.3	5.5	5.1	2.5		14.6		7.0
	std exp gill net (150 ft)	Black Bullhead	9.0									
Black Crappie							0.0	4.0		7.5	0.5	3.0
Golden Shiner						0.0		0.0				0.0
Largemouth Bass		0.5				2.0		0.5				1.0
Northern Pike		1.5		0.5	0.3	6.5	1.0	3.0	0.5	1.5	1.5	1.8
Rainbow Trout			0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rainbow Trout (Hatchery)		0.0										0.0
Rock Bass		5.0				0.0	1.5	6.0	1.0		0.5	2.3
Smallmouth Bass							0.5	1.5			1.5	1.2
White Sucker		2.0	3.5			2.0	2.0	2.5	0.5		3.0	2.2
Yellow Perch	27.0	46.0	10.5	3.5	73.5	104.5	81.0	40.0	40.0	56.0	48.2	

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	
frame net (std 3/4 in)	Black Crappie	PSD			4	17	74	100	50		37		
		PSD-P			0	0	0	0	17		4		
		Wr			102	94	97	97	113		104		
	Northern Pike	PSD			0		100	0	0		50		
		PSD-P			0		0	0	0		0		
		Wr			92			86	96		106		
	Yellow Perch	PSD			44	72	80	54	60		56		
		PSD-P			7	9	2	7	10		6		
		Wr			98	93	83	94	102		93		
std exp gill net (150 ft)	Black Crappie	PSD						0	25		47	100	
		PSD-P						0	0		0	0	
		Wr							104		87	99	
	Northern Pike	PSD	33		100	100	100	100	100	100	100	33	67
		PSD-P	0		0	0	31	50	17	0	0	0	33
		Wr	92				108	96	106	111	90	104	
	Yellow Perch	PSD	93	98	100	93	74	79	64	40	69	82	
		PSD-P	11	20	24	14	10	11	19	1	3	9	
		Wr	96	101	101	104	103	107	101	106	101	98	

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+
2015	79		119 (1)		191 (67)	207 (8)	249 (3)	300 (1)			
2011	27			163 (2)	206 (17)	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	107	165 (1)	185 (3)	195 (19)	224 (32)	233 (32)	230 (7)	223 (2)	234 (3)	234 (6)	
2015	80	144 (2)	188 (9)	203 (43)	227 (22)	265 (2)	243 (2)				
2014	78		181 (9)	188 (47)	203 (1)	230 (6)		235 (13)			234 (2)
2013	157	153 (3)	152 (38)	195 (16)	221 (14)	233 (39)	246 (26)	255 (21)			273 (2)
2012	208		150 (5)	205 (60)	213 (76)	239 (32)	239 (35)	271 (2)			292 (1)
2011	147		154 (2)	173 (43)	226 (40)	236 (51)			241 (4)	225 (6)	
2010	14	145 (1)			233 (1)	232 (8)	276 (1)	213 (1)		233 (1)	244 (1)

Fish Condition

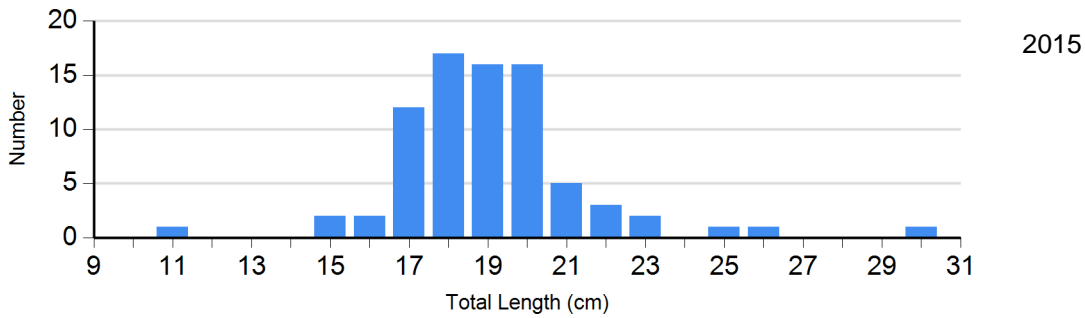
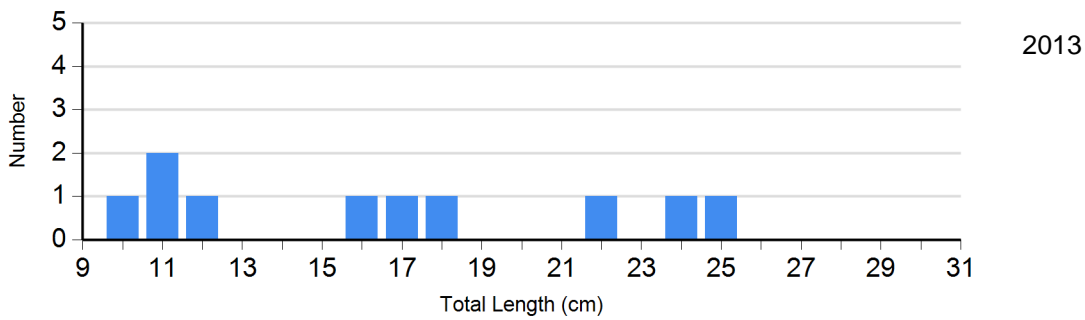
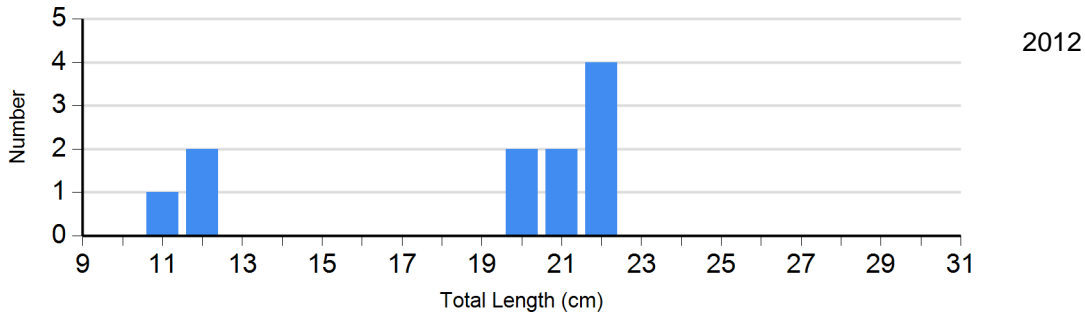
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

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	0		8	97 (1.6)	0		0	
	2013	3	124 (2.8)	2	98 (2.3)	1	110	0	
	2015	49	105 (1.2)	26	104 (2.8)	2	99 (0.4)	1	94
Northern Pike Gill Net	2012	0		1	96	0		1	
	2013	0		5	104 (4.7)	1	115	0	
	2014	0		1	111	0		0	
	2015	2	90 (7.3)	1	92	0		0	
	2016	1	90	1	103	0		1	119
Yellow Perch Gill Net	2012	44	109 (1.3)	141	107 (0.7)	24	103 (1.1)	0	
	2013	58	101 (1.9)	74	104 (0.8)	30	95 (1.7)	0	
	2014	48	109 (1.5)	31	102 (1.9)	1	89	0	
	2015	25	108 (3.3)	53	98 (1.0)	2	90 (12.1)	0	
	2016	20	101 (2.0)	82	98 (0.7)	10	93 (1.6)	0	

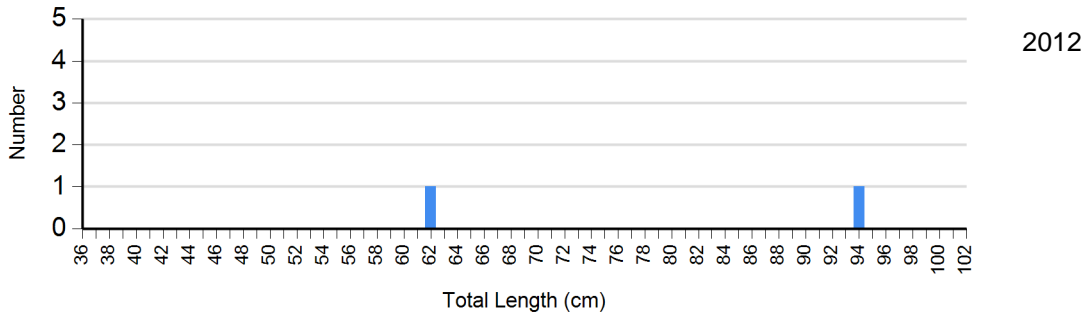
Length Frequency Distribution

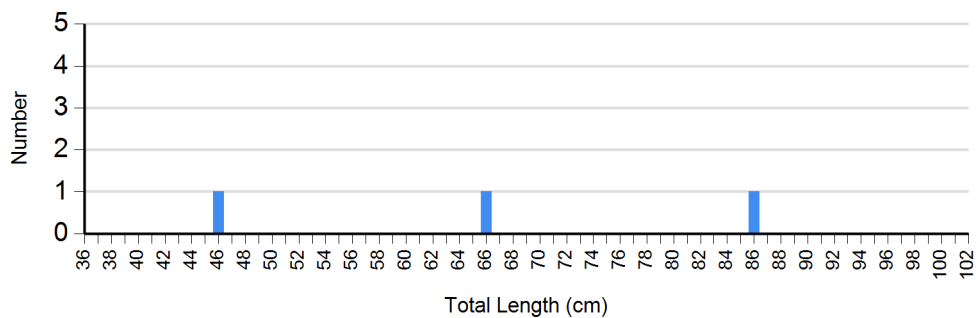
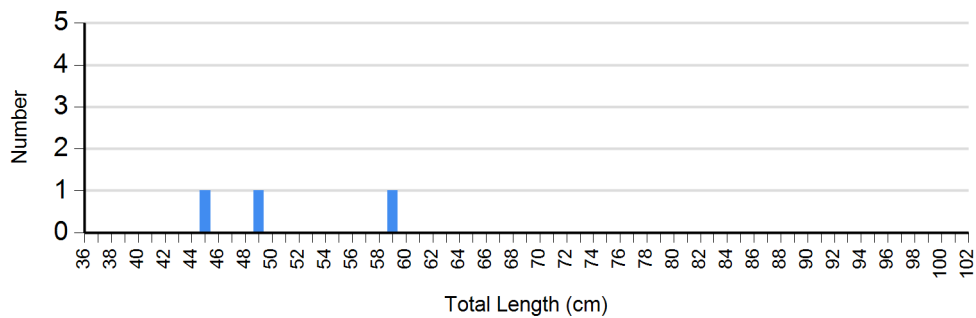
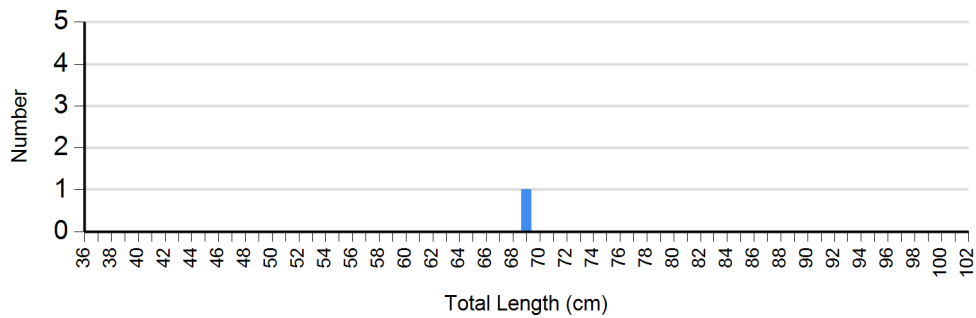
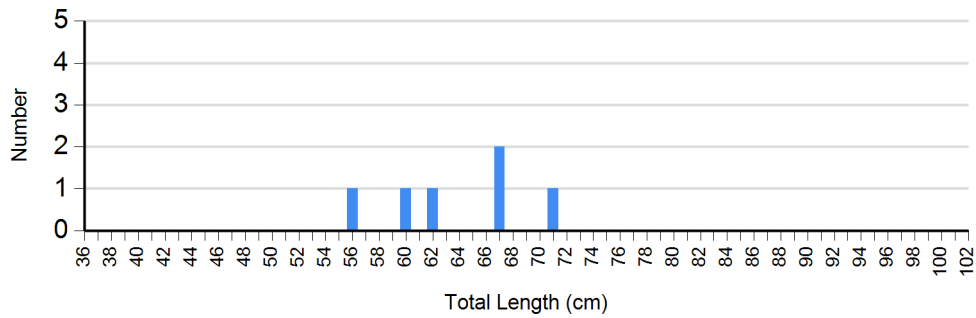
Length frequency histogram of species sampled by year.

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

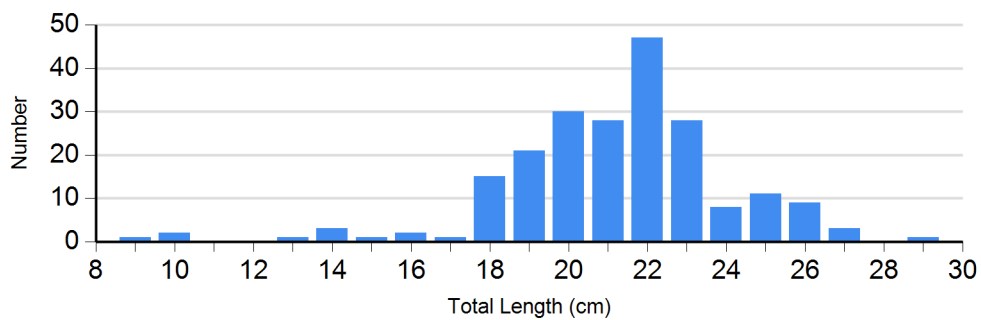


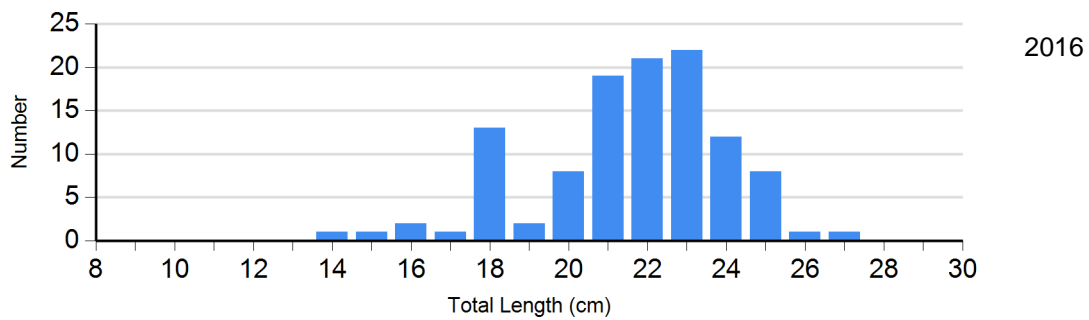
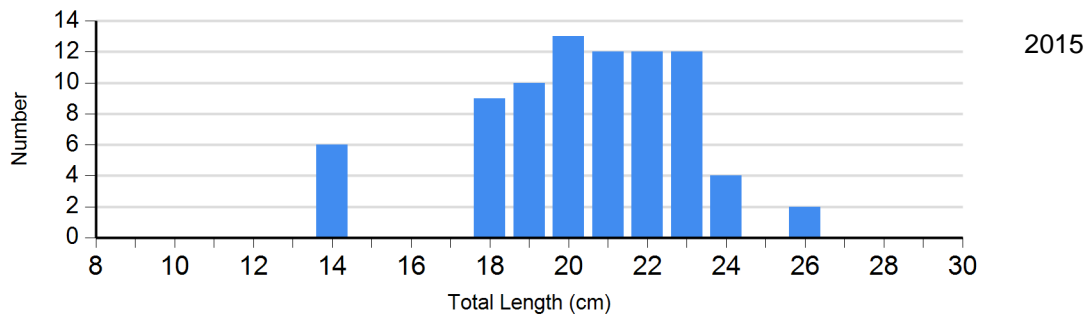
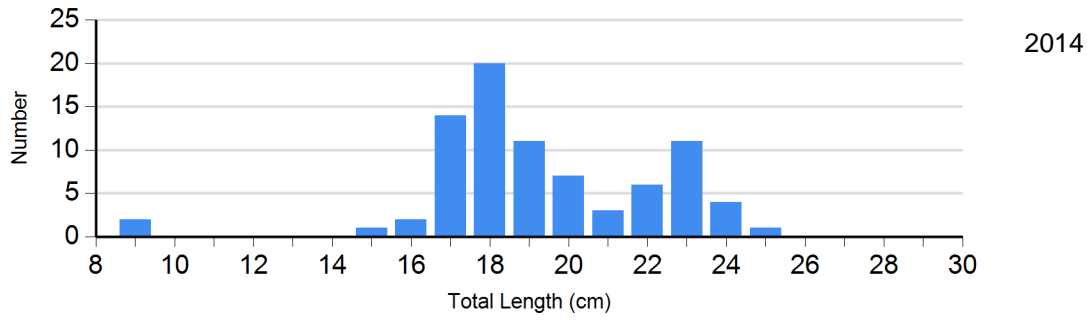
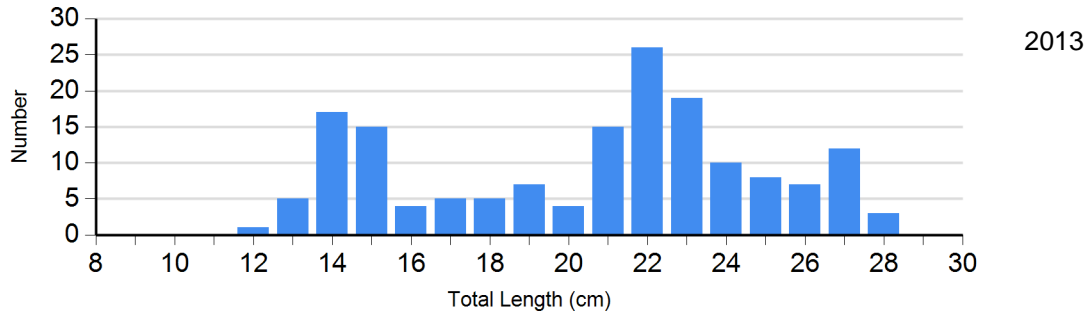
Species: Northern Pike
Gear: std exp gill net (150 ft)





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

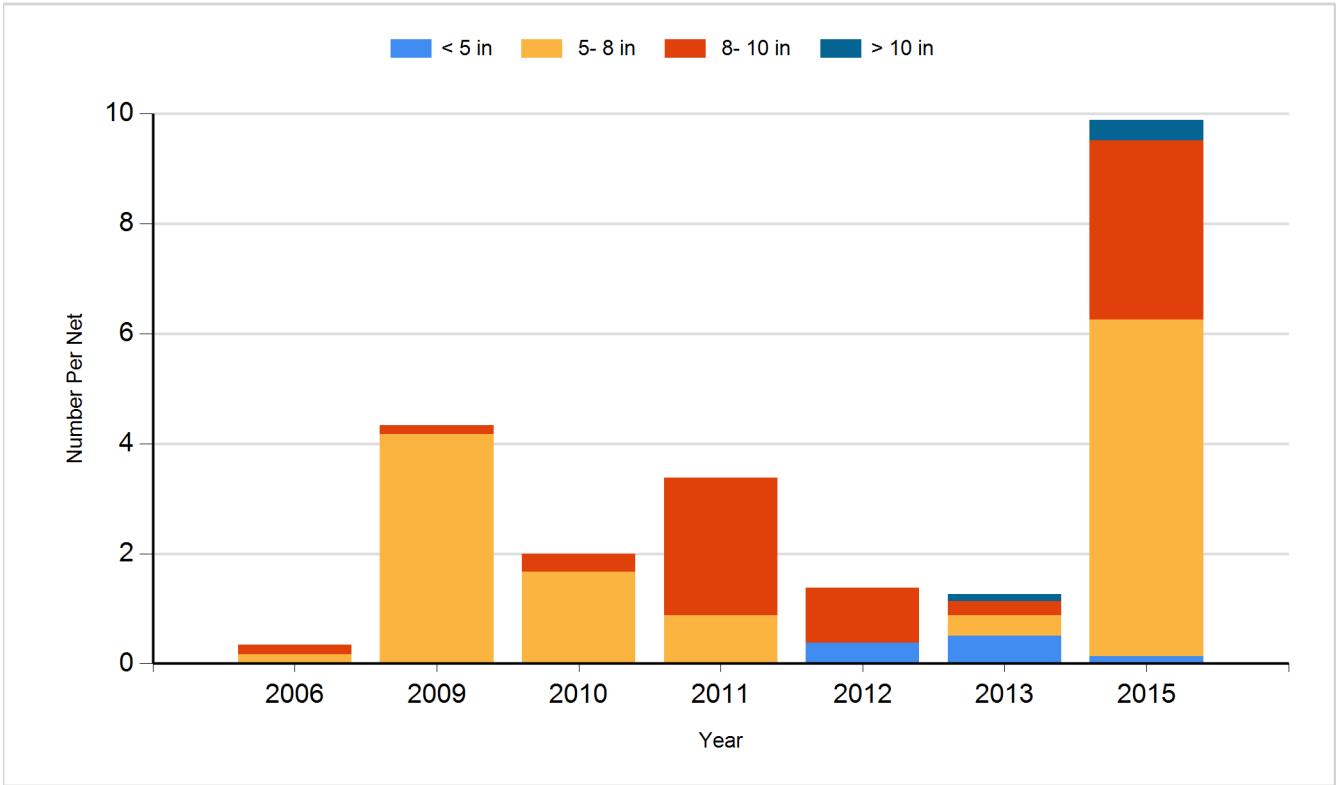




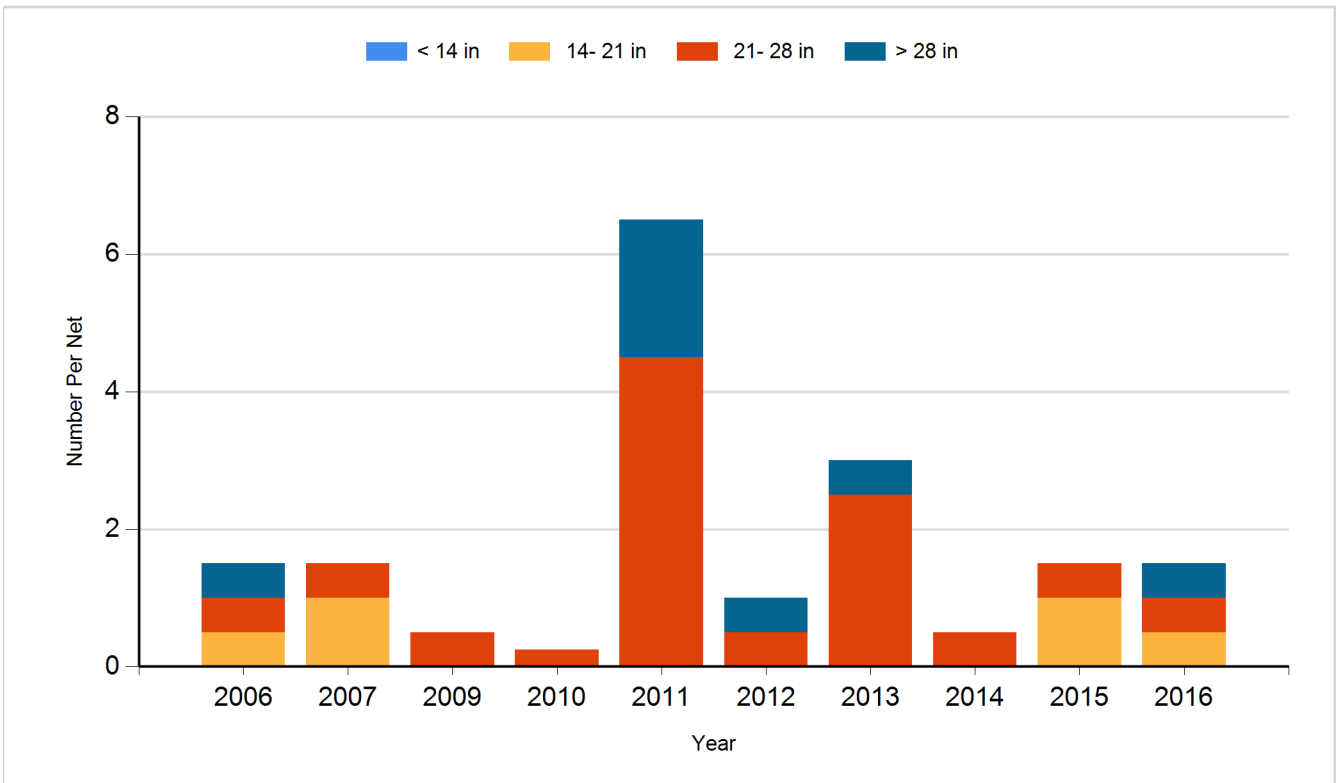
Historic Fish Sizes and Relative Abundance

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

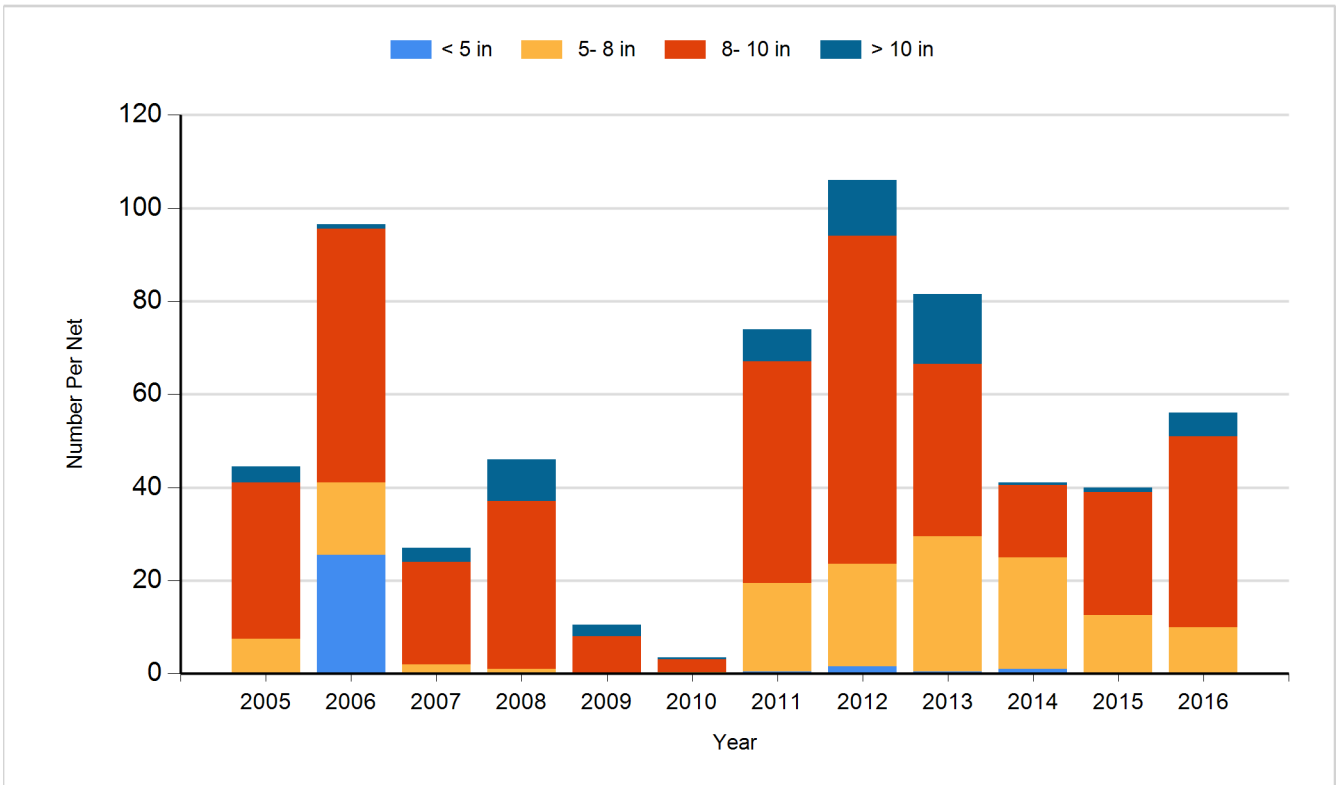
Species: Black Crappie
Gear: Frame Net



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
2005	Brown Trout (Soda Lake)	Catchable	2,664
2005	Rainbow Trout (Ennis)	Catchable	5,000
2005	Rainbow Trout (McConaugRainbow Trout)	Catchable	10,700
2006	Rainbow Trout (Erwin)	Catchable	5,000
2006	Rainbow Trout (Shasta)	Catchable	10,789
2007	Brown Trout (Soda Lake)	Catchable	726
2007	Rainbow Trout (Erwin)	Catchable	3,500
2007	Rainbow Trout (Erwin)	Catchable 11"	600
2007	Rainbow Trout (Shasta)	Catchable	3,525
2007	Rainbow Trout (Shasta)	Catchable 11"	3,965
2008	Rainbow Trout (Shasta)	Catchable 11"	3,582
2008	Rainbow Trout (Utah)	Catchable	5,000
2009	Brown Trout (Utah)	Catchable 11"	1,000
2009	Rainbow Trout (Erwin)	Catchable	10,000
2009	Rainbow Trout (McConaugRainbow Trout)	Catchable	10,637
2009	Rainbow Trout (McConaugRainbow Trout)	Fingerling	6,000
2010	Brown Trout (Soda Lake)	Catchable 11"	900
2010	Rainbow Trout (Erwin x Arlee)	Catchable	9,000
2010	Rainbow Trout (McConaugRainbow Trout)	Catchable	9,630
2010	Smallmouth Bass	Fingerling	7,800
2011	Rainbow Trout (Erwin x Arlee)	Catchable	7,920
2011	Rainbow Trout (McConaugRainbow Trout)	Catchable	9,630
2011	Rainbow Trout (Shasta)	Fingerling	7,933
2011	Smallmouth Bass	Adult	200
2011	Smallmouth Bass	Fingerling	5,600
2012	Rainbow Trout (Erwin x Arlee)	Catchable	9,000
2012	Rainbow Trout (McConaugRainbow Trout)	Catchable	5,000
2012	Rainbow Trout (McConaugRainbow Trout)	Catchable 11"	5,000
2012	Smallmouth Bass	Adult	285
2013	Rainbow Trout (Erwin x Arlee)	Catchable	9,000
2013	Rainbow Trout (McConaugRainbow Trout)	Catchable 11"	10,000

2013	Smallmouth Bass	Fingerling	6,890
2014	Rainbow Trout (Erwin x Arlee)	Catchable	1,000
2014	Rainbow Trout (Shasta)	Catchable	8,079
2014	Rainbow Trout (Shasta)	Catchable 11"	10,000
2015	Rainbow Trout (Ennis)	Catchable 11"	3,139
2015	Rainbow Trout (Shasta)	Catchable 11"	15,861
2016	Rainbow Trout (Shasta)	Catchable 11"	19,421
2016	Smallmouth Bass	Adult	300
