

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

Pickerel, Day County

UBS-Lake-358-000

2016

Lake Information

Name:	Pickerel	Maximum Depth:	41 Feet
County:	Day	Mean Depth:	16 Feet
		OHWM Elevation:	1,846
Surface Area:	989 Acres	Outlet Elevation:	1,845

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	June 14, 2016	4 net-nights
AFS std gill net	June 15, 2016	4 net-nights
AFS std gill net	June 16, 2016	4 net-nights
boat shocker (night)	September 07, 2016	2400 seconds

Common Fish Species Present

Walleye

Smallmouth Bass

Northern Pike

Bluegill

Black Crappie

Yellow Perch

White Bass

White Sucker

Black Bullhead

Common Carp

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	0.1	0.1	100		100		92	
	Black Crappie	0.2	0.2	100		100		98	9
	Bluegill	0.2	0.2	100		100		124	13
	Common Carp	0.1	0.1	100		100		97	
	Northern Pike	0.5	0.2	67		33		78	3
	Smallmouth Bass	2.1	0.7	64	15	40	15	90	2
	Walleye	2.3	0.8	57	15	7		83	1
	White Bass	2.9	1.3	100		100		90	1
	White Sucker	1.1	0.5	100		100		108	2
	Yellow Perch	8.9	2.8	98		52	7	109	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										0.1	0.1
	Black Crappie										0.2	0.2
	Bluegill										0.2	0.2
	Common Carp										0.1	0.1
	Northern Pike										0.5	0.5
	Smallmouth Bass										2.1	2.1
	Walleye										2.3	2.3
	White Bass										2.9	2.9
	White Sucker										1.1	1.1
	Yellow Perch										8.9	8.9
boat shocker (night)	Smallmouth Bass	123.5	96.3	42.2		51.0		138.0		77.6		88.1
	Walleye	12.0	32.8	3.8				46.3	10.0	13.1		19.7
frame net (std 3/4 in)	Black Bullhead	2.5	19.4	14.9	4.6	2.8	4.1	6.2	10.1	10.9		8.4
	Black Crappie	29.1	15.6	11.6	4.0	3.8	2.5	9.3	1.0	0.9		8.6
	Bluegill	16.1	29.2	9.7	3.5	2.6	5.4	12.8	0.6	0.4		8.9
	Common Carp	0.1					0.1			0.1		0.1
	Northern Pike	0.6	0.7	0.4	0.3		0.6	0.1	0.2	0.5		0.4
	Rock Bass	4.2	8.4	3.7	4.3	1.2	2.6	3.4	6.0	8.5		4.7
	Smallmouth Bass	5.3	5.4	1.9	1.9	1.6	5.1	3.2	2.3	2.3		3.2
	Snapping Turtle	0.0										0.0
	Walleye	0.5	0.3	0.6	0.8	0.1	1.8	0.4	0.6	0.3		0.6
	Western Painted Turtle	0.0								0.0		0.0
std exp gill net	Black Bullhead	4.5	5.5	0.2	0.1	0.2	1.0	1.0	0.2	3.2		1.8
	Black Crappie	16.7	26.8	1.3	2.8	0.7	4.5	2.0	7.2	2.5		7.2
	Bluegill	1.5	0.7		0.1		0.5	1.3				0.8
	Common Carp	1.7	0.7	0.1				0.2	0.2	0.3		0.5
	Northern Pike	6.0	5.7	1.1	0.9	1.3	3.3	4.7	3.0	3.3		3.3
	Rock Bass	1.8	0.2	0.1		0.2	0.2					0.5
	Smallmouth Bass	1.2	0.3	0.4	0.1	0.2	0.8	1.0	2.2	1.7		0.9
	Spottail Shiner		0.0	0.0	0.0	0.0	0.0	0.0				0.0

		CPUE										
Gear	Species	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Avg
std exp gill net	Walleye	12.7	6.0	1.6	3.1	4.5	8.0	17.3	12.3	18.5		9.3
	White Bass	1.8	0.8	0.4	0.2		3.2	1.8	3.0	4.0		1.9
	White Sucker	3.5	3.7	0.4	0.6	0.7	1.5	1.7	1.5	1.7		1.7
	Yellow Perch	43.7	30.0	2.5	7.0	11.9	27.5	56.0	23.2	27.8		25.5

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	Black Crappie	PSD											100
		PSD-P											100
		Wr											98
	Northern Pike	PSD											67
		PSD-P											33
		Wr											78
	Walleye	PSD											57
		PSD-P											7
		Wr											83
Yellow Perch	PSD											98	
	PSD-P											52	
	Wr											109	
boat shocker (night)	Walleye	PSD	0	0	0					0	0	0	
		PSD-P	0	0	0					0	0	0	
		Wr	91	87	86					89	92	94	
frame net (std 3/4 in)	Black Crappie	PSD	17	61	97	100	100	56	100	100	94		
		PSD-P	15	7	4	58	88	47	69	94	94		
		Wr	120	109	102	99	95	111	96	100	95		
	Northern Pike	PSD	67	38	38	20		30	50	67	11		
		PSD-P	8	15	0	0		10	50	33	0		
		Wr	93	85	82	77		84	82	73	84		
	Walleye	PSD	80	17	10	7	100	12	29	40	100		
		PSD-P	10	17	10	0	0	3	0	0	0		
		Wr	86	80	81	80	85	84	79	81	79		
Yellow Perch	PSD	22	0	100	33	22	42	75	100	50			
	PSD-P	5	0	0	0	22	0	0	0	50			
	Wr	94	92	75	98	108	100	96	92	105			
std exp gill net	Black Crappie	PSD	3	53	100	100	92	78	100	100	100		
		PSD-P	3	1	17	60	92	74	25	88	100		
		Wr	127	114	105	101	99	110	104	103	96		
	Northern Pike	PSD	56	56	60	69	61	50	54	56	40		

Gear	Species	Index	Year									
			2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
std exp gill net	Northern Pike	PSD-P	3	6	25	13	4	5	7	17	5	
		Wr	80	82	81	84	86	82	78	80	80	
	Walleye	PSD	53	31	17	4	36	25	16	16	52	
		PSD-P	1	3	7	0	4	0	1	1	1	
	Yellow Perch	Wr	85	82	87	82	90	83	83	86	87	
		PSD	17	29	56	40	23	41	63	86	79	
		PSD-P	5	2	0	0	5	4	7	12	40	
		Wr	102	105	106	104	114	107	107	108	110	

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	16			175 (1)		273 (10)				300 (1)	313 (4)
2014	18				253 (8)					298 (10)	
2013	163			222 (45)	239 (6)				293 (111)		320 (1)
2012	45		176 (22)	226 (2)			264 (1)	280 (20)			
2011	71	88 (3)				246 (2)	263 (65)				296 (1)
2009	206			188 (6)	231 (197)				295 (1)		302 (2)
2008	278			201 (259)	236 (1)			286 (8)	292 (3)		293 (8)
2007	562		153 (473)	213 (6)		275 (2)	286 (16)			298 (66)	

Species: Walleye

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2016	32	197 (4)	296 (1)	356 (10)	372 (1)	420 (9)	422 (6)				645 (1)
2015	114	186 (3)	298 (28)	373 (25)	388 (37)	410 (19)		604 (1)	427 (1)		
2014	75	184 (1)	307 (5)	351 (41)	367 (23)	463 (1)	416 (1)	406 (1)	443 (1)		556 (1)
2013	106	186 (1)	276 (19)	345 (68)	383 (6)	412 (4)	422 (3)	442 (4)			676 (1)
2012	53	207 (7)	277 (26)	312 (4)	376 (4)	405 (4)	417 (7)		483 (1)		508 (1)
2011	86	178 (5)	277 (3)	333 (25)	377 (10)	385 (37)	366 (2)	385 (1)			546 (3)
2010	59		258 (17)	312 (14)	322 (26)		433 (1)	398 (1)			
2009	30		258 (3)	316 (18)	357 (2)	385 (3)	563 (1)	486 (2)		486 (1)	
2008	44	190 (3)	263 (19)	330 (3)	375 (10)	446 (3)	395 (3)	461 (2)			682 (1)
2007	82	211 (6)	295 (2)	358 (31)	390 (16)	446 (8)	433 (16)	489 (3)			

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		164 (1)	209 (10)	237 (18)	247 (26)	258 (26)	272 (24)	294 (1)		
2015	168	100 (1)	157 (16)	196 (24)	238 (50)	255 (46)	260 (23)	249 (4)			
2014	139		146 (6)	202 (27)	229 (67)	240 (38)	234 (3)				
2013	340	99 (1)	137 (27)	192 (127)	222 (150)	247 (31)		264 (4)	276 (2)		
2012	186	102 (22)	150 (44)	195 (79)	224 (25)	241 (3)	237 (8)	249 (2)	268 (3)		
2011	254	95 (30)	146 (130)	192 (65)	224 (7)	239 (11)	248 (7)	255 (3)	252 (1)		
2010	149	96 (22)	148 (68)	193 (11)	221 (24)	223 (20)	230 (4)				
2009	45		150 (2)	172 (9)	196 (15)	221 (18)	224 (1)				

Fish Condition

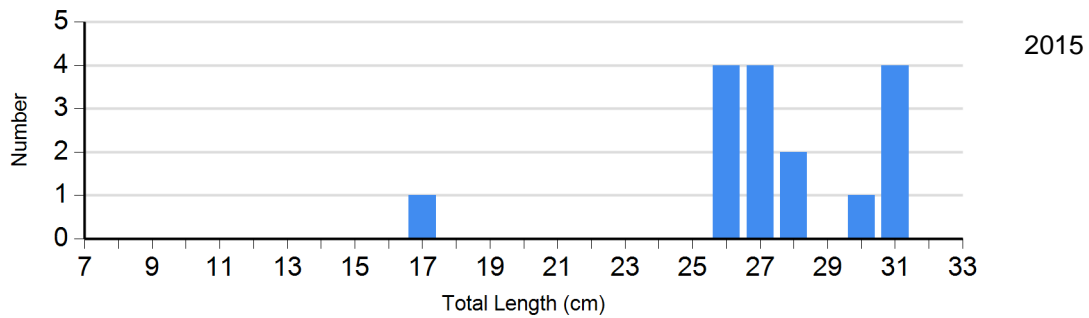
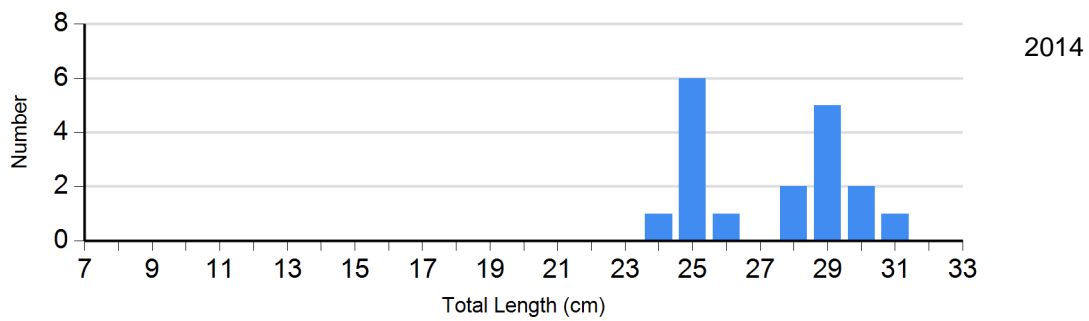
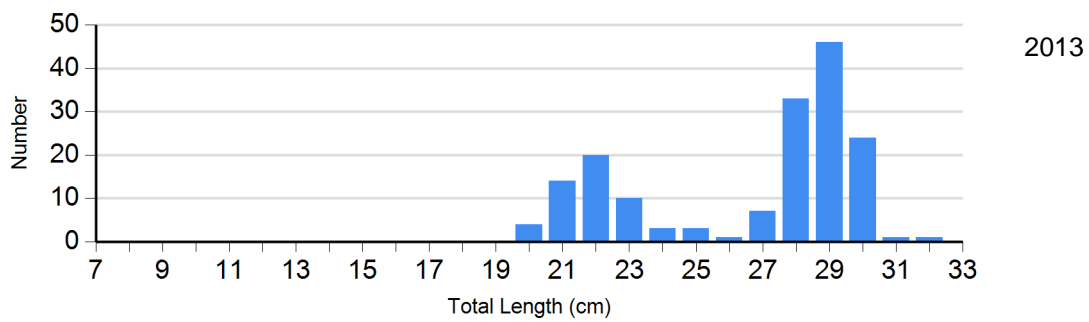
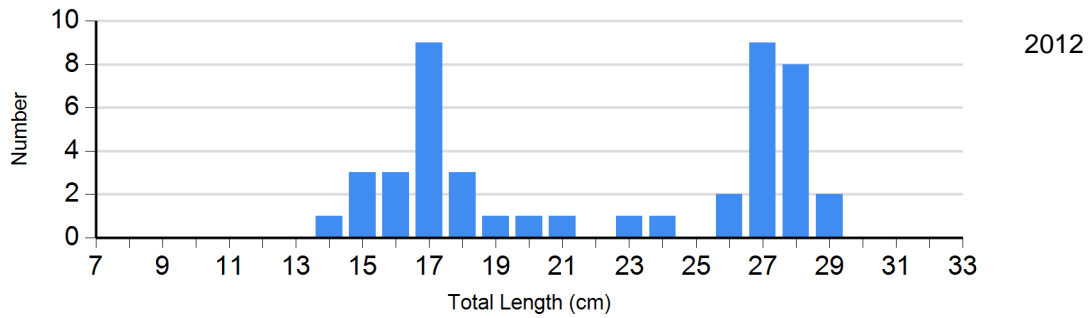
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

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	20	121 (5.9)	4	117 (3.3)	21	101 (5.8)	0	
	2013	0		51	110 (1.7)	90	91 (0.7)	26	87 (0.9)
	2014	0		1	118	14	101 (1.5)	3	84 (3.4)
	2015	1	112	0		10	97 (1.6)	5	87 (1.6)
Northern Pike Gill Net	2012	10	82 (1.2)	9	82 (1.1)	1	86	0	
	2013	13	77 (2.0)	13	80 (1.9)	2	80 (1.3)	0	
	2014	8	77 (2.2)	7	81 (1.2)	1	80	2	85 (6.8)
	2015	12	78 (2.5)	7	81 (4.5)	1	92	0	
	2016	2	79 (0.5)	2	77 (7.7)	1	80	1	79
Walleye Gill Net	2012	36	83 (0.6)	12	82 (1.5)	0		0	
	2013	87	83 (0.6)	16	82 (0.8)	0		1	88
	2014	62	86 (0.6)	11	85 (1.4)	1	78	0	
	2015	53	90 (0.6)	57	84 (0.6)	1	87	0	
	2016	12	85 (1.5)	14	81 (1.5)	1	79	1	88
Yellow Perch Gill Net	2012	98	110 (1.0)	60	104 (1.5)	7	95 (2.6)	0	
	2013	126	108 (0.7)	187	107 (0.5)	23	103 (1.6)	0	
	2014	19	106 (2.5)	103	110 (0.7)	17	105 (1.6)	0	
	2015	35	107 (1.3)	66	111 (0.9)	66	110 (1.1)	0	
	2016	2	117 (10.4)	49	109 (1.1)	56	109 (0.8)	0	

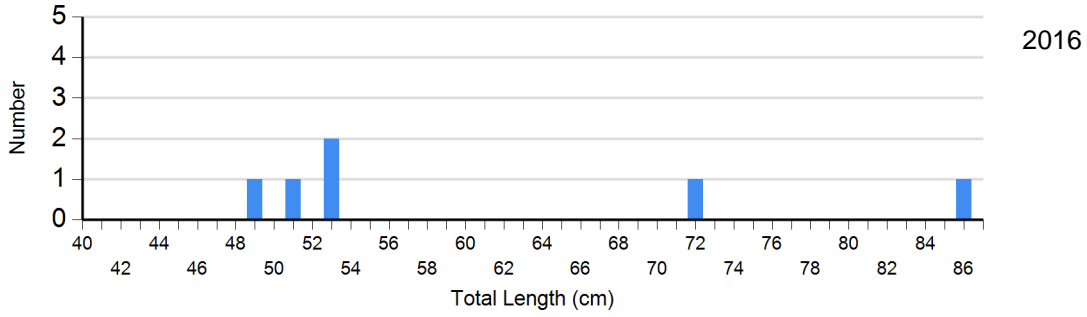
Length Frequency Distribution

Length frequency histogram of species sampled by year.

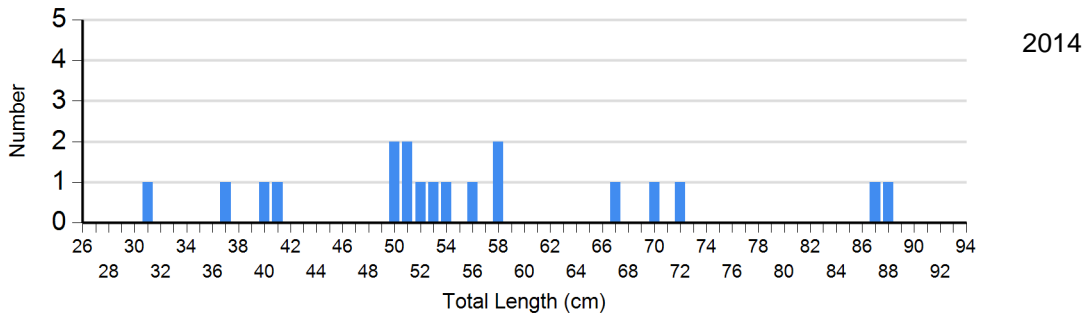
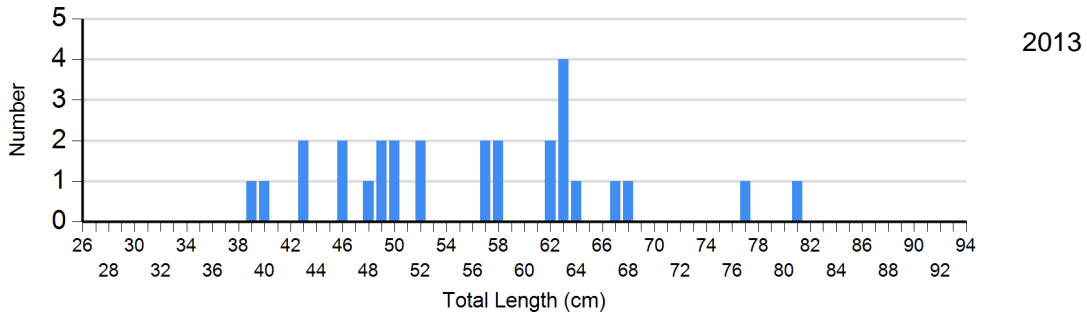
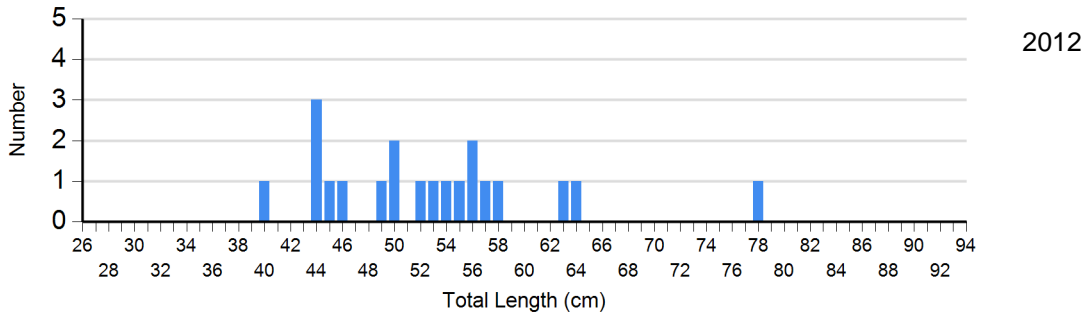
Species: Black Crappie
Gear: frame net (std 3/4 in)

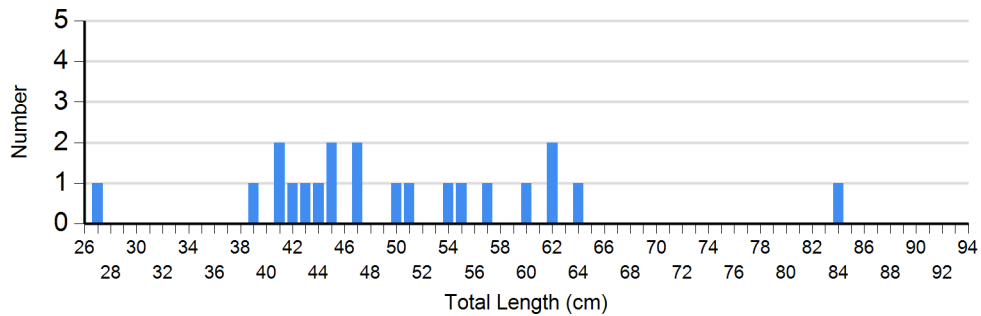


Species: Northern Pike
 Gear: AFS std gill net



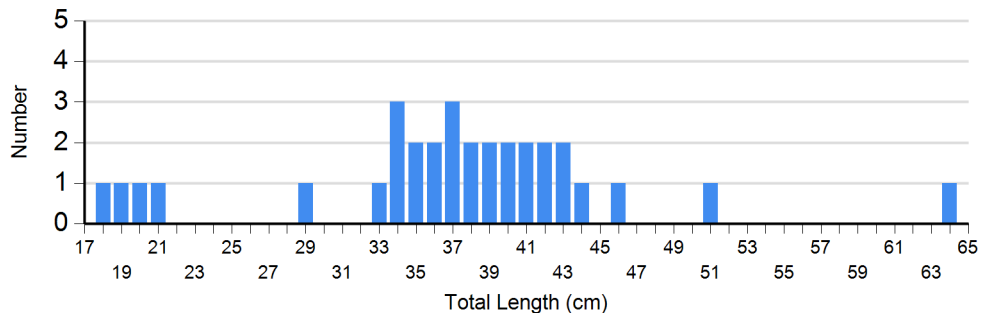
Species: Northern Pike
 Gear: std exp gill net





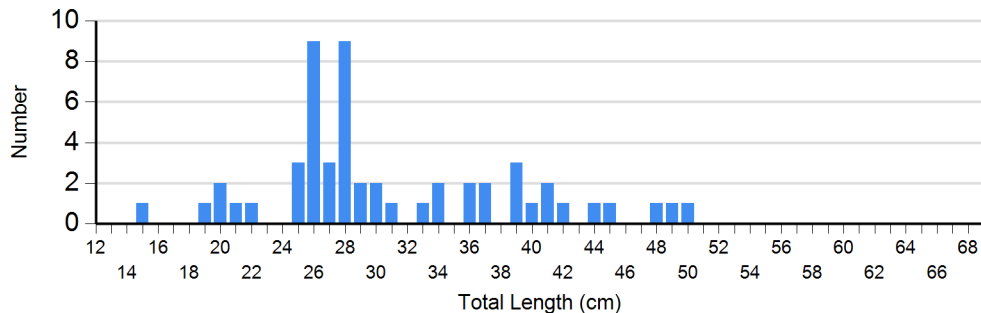
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Species: Walleye
Gear: AFS std gill net

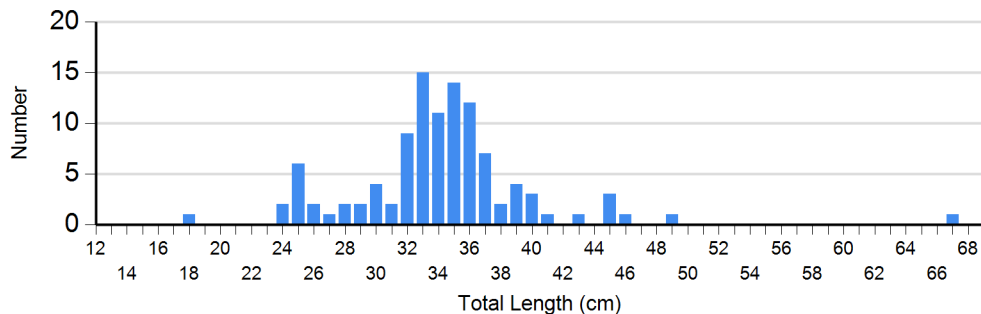


2016

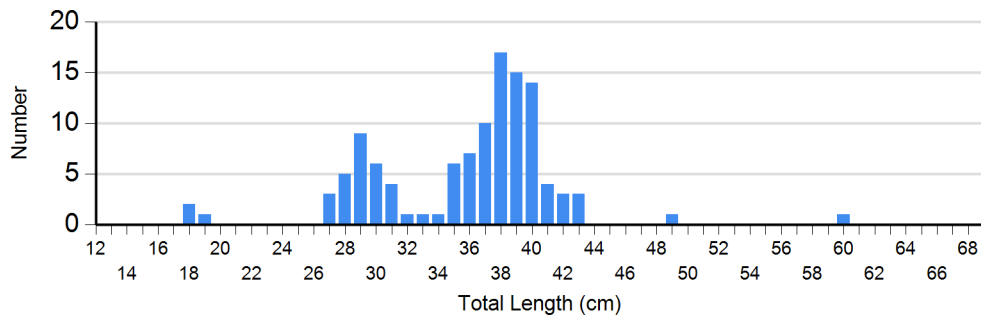
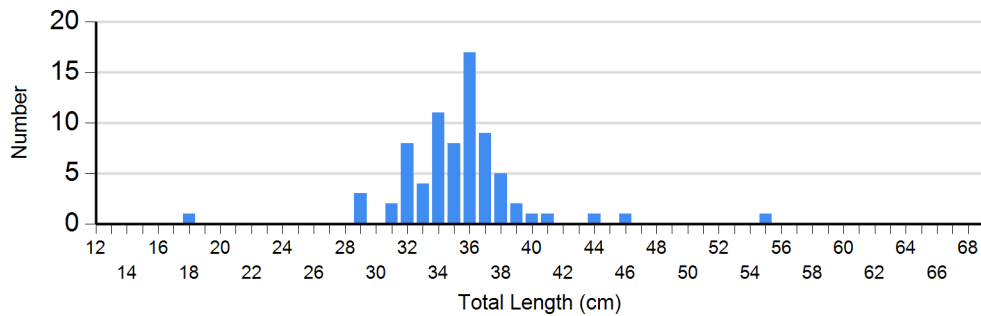
Species: Walleye
Gear: std exp gill net



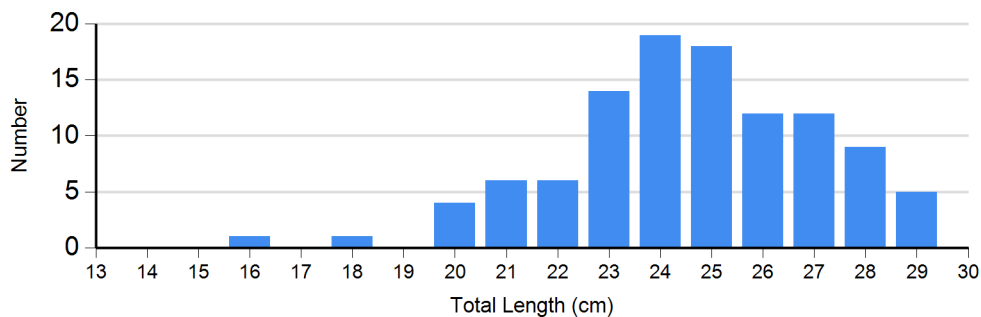
2012



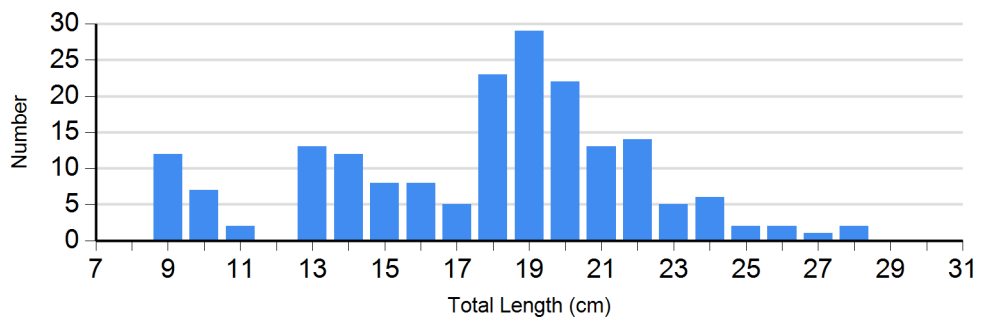
2013

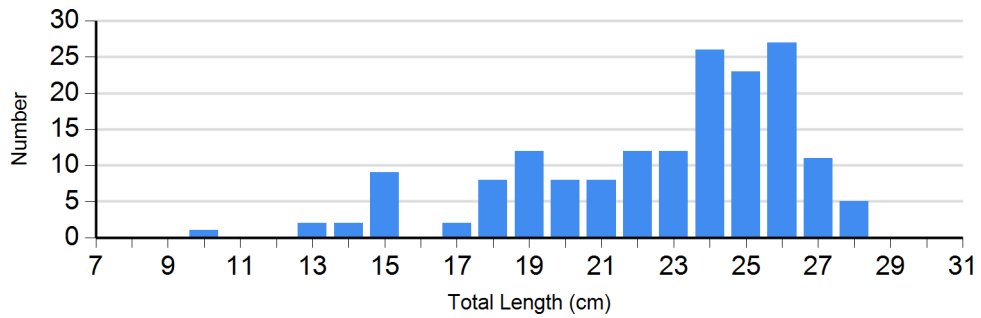
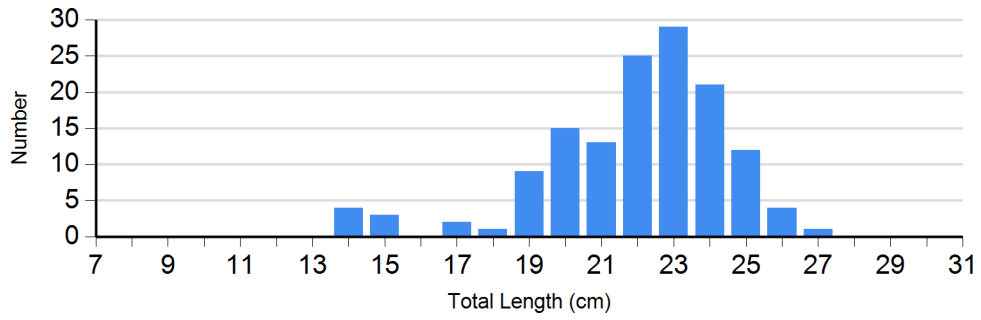
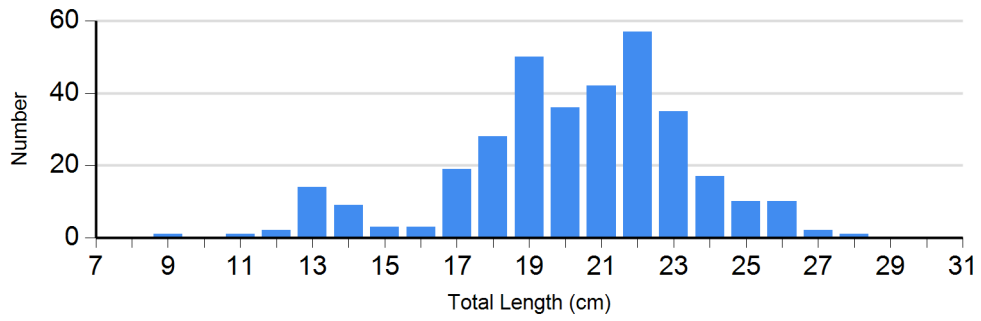


Species: Yellow Perch
Gear: AFS std gill net



Species: Yellow Perch
Gear: std exp gill net

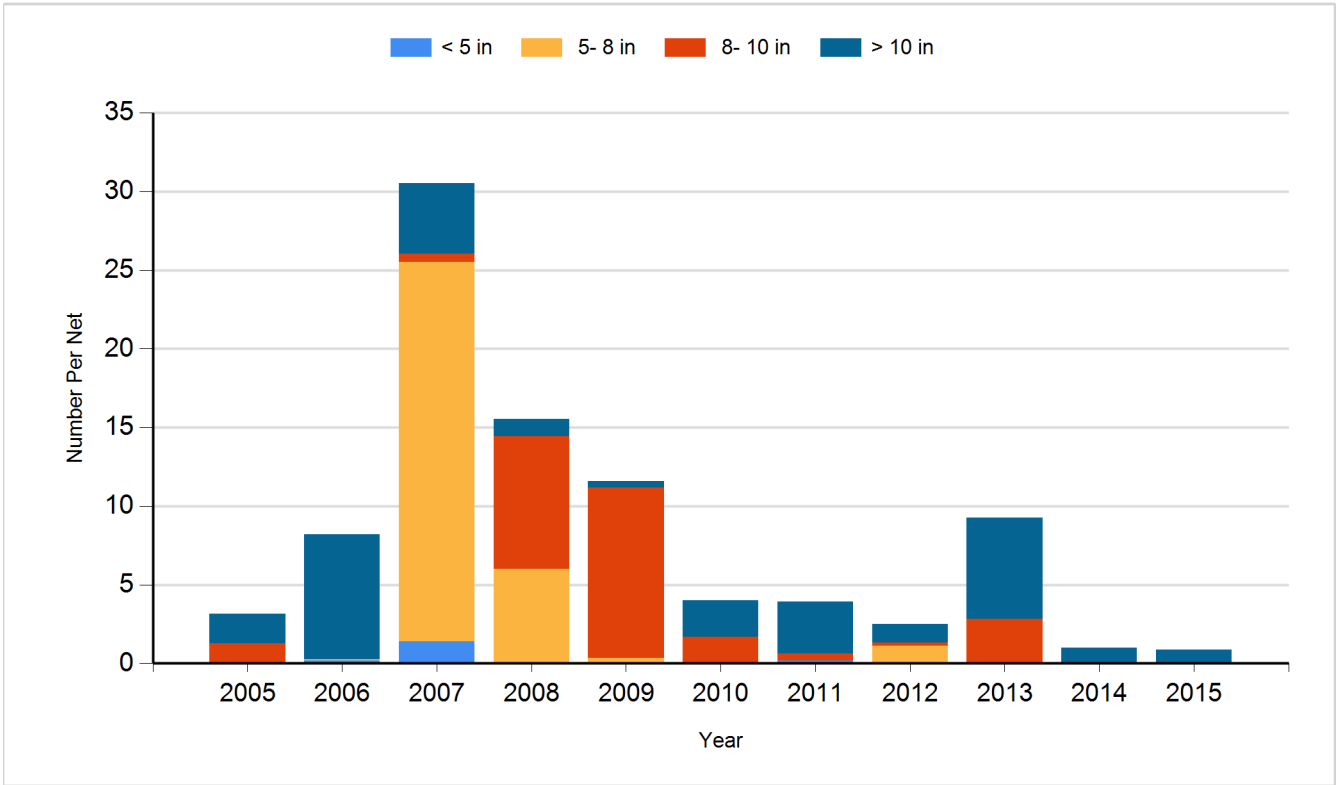




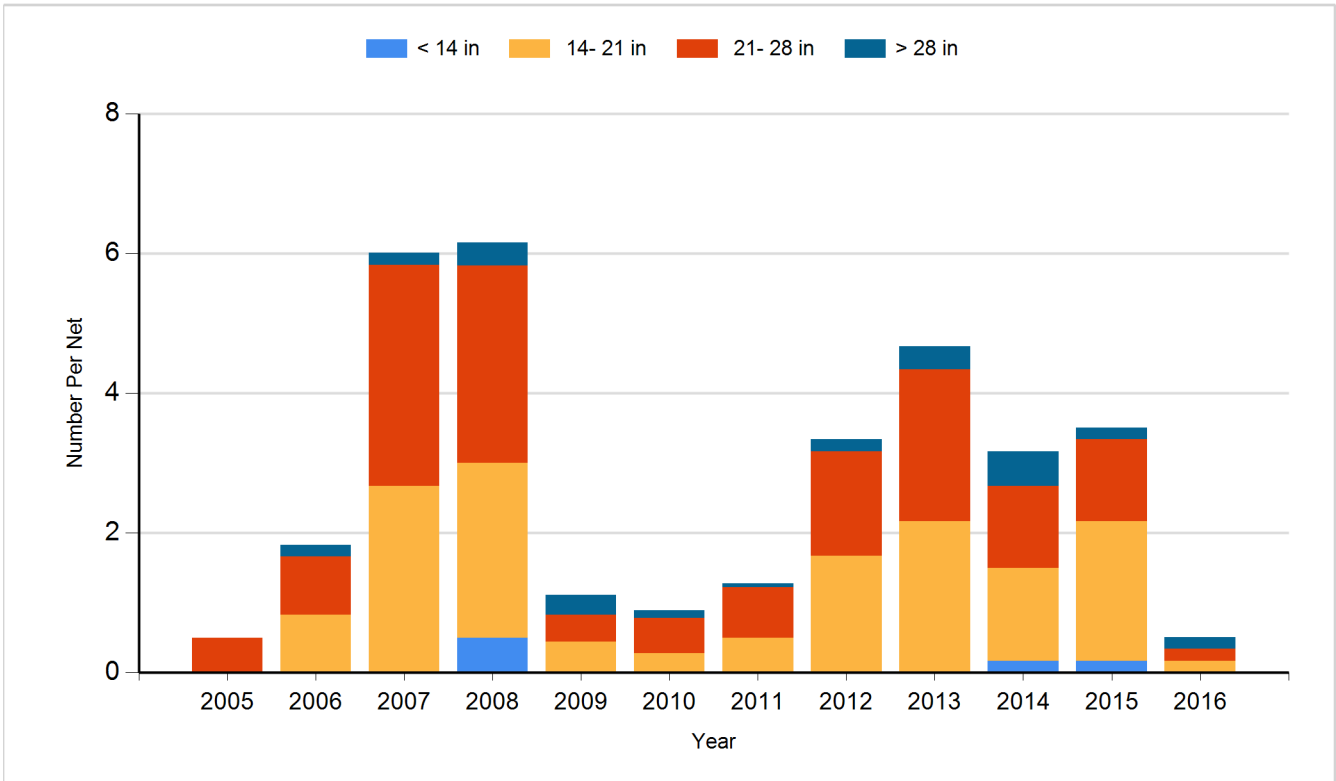
Historic Fish Sizes and Relative Abundance

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

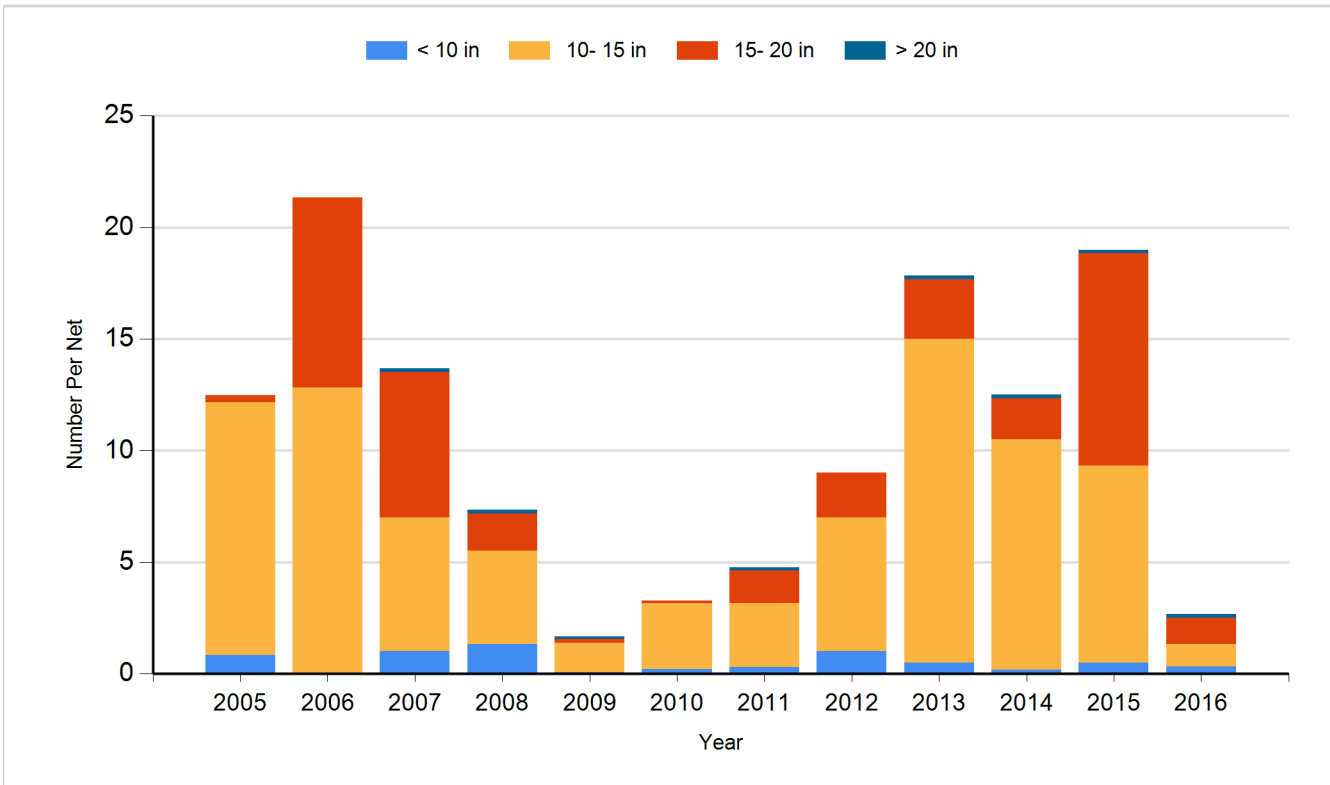
Species: Black Crappie
Gear: Frame Net



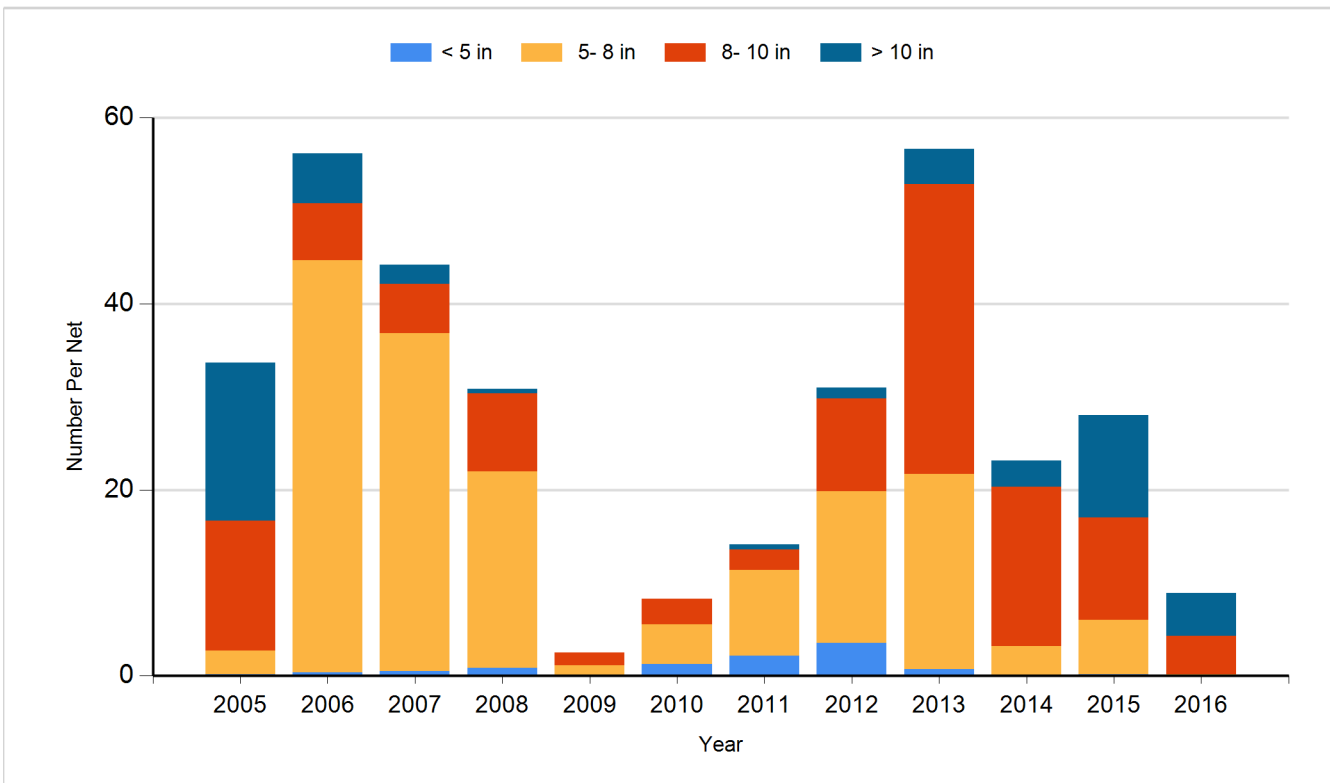
Species: Northern Pike
Gear: Gill Net



Species: Walleye
Gear: Gill Net



Species: Yellow Perch
Gear: Gill Net



Fish Stocking

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

Year	Species	Size	Number
2006	Largemouth Bass	Fry	101,500
2006	Walleye	Large Fingerling	25,146
2007	Walleye	Large Fingerling	765
2008	Walleye	Large Fingerling	15,135
2010	Walleye	Large Fingerling	17,442
2011	Walleye	Large Fingerling	18,585
2013	Walleye	Small Fingerling	93,410
2015	Walleye	Small Fingerling	91,850