SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Reetz West, Day County
MUD-Lake-317-000
2016

Lake Information

Name: Reetz West

County: Day

Surface Area: 983 Acres

Maximum Depth: 25 Feet

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	May 26, 2016	4 net-nights
AFS std gill net	May 27, 2016	4 net-nights
boat shocker (night)	May 23, 2016	3600 seconds
boat shocker (night)	September 08, 2016	3600 seconds

Common Fish Species Present

Black Crappie

Yellow Perch

Walleye

Smallmouth Bass

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).

$$CPUE = \frac{number\ of\ fish}{effort}$$

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 std gill net	Black Crappie	0.1	0.2	100		100		114	
	Common Carp	0.3	0.4	100		100		106	1
	Smallmouth Bass	1.5	1.2	75		75		94	3
	Walleye	17.4	1.9	99		57	6	83	1
	Yellow Perch	1.1	0.7	56		56		95	3
boat shocker (night)	Smallmouth Bass	123.3	43.1	94	3	73	5	99	1
	Walleye	20.3	18.0	0		0		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.

		CPUE										
Gear	Species	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Avg
AFS std gill net	Black Crappie										0.1	0.1
	Common Carp										0.3	0.3
	Smallmouth Bass										1.5	1.5
	Walleye										17.4	17.4
	Yellow Perch										1.1	1.1
boat shocker (day)	Smallmouth Bass					19,467.3	266,400.0					142933.7
boat shocker (night)	Smallmouth Bass			13.1				59.0	116.7		123.3	78.0
	Walleye				26.1				58.9	94.0	20.3	49.8
frame net (std 3/4 in)	Black Crappie					13.9						13.9
std exp gill net	Black Crappie			0.0	1.3	2.7		9.0		0.3		2.7
	Smallmouth Bass	0.3	0.5					0.5	1.5	0.8		0.7
	Walleye	10.0	18.8	8.2	4.3	5.1		31.0	30.0	26.5		16.7
	Yellow Perch	15.8	8.5	2.2	13.8	15.9		24.0	30.0	36.5		18.3

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	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
AFS std gill net	Black Crappie	PSD										100
		PSD-P										100
		Wr										114
	Walleye	PSD										99
		PSD-P										57
		Wr										83
	Yellow Perch	PSD										56
		PSD-P										56
		Wr										95
boat shocker (night)	Walleye	PSD				0				0	0	0
		PSD-P				0				0	0	0
		Wr				106				92	100	98
frame net (std 3/4 in)	Black Crappie	PSD					64					
		PSD-P					57					
		Wr					115					
std exp gill net	Black Crappie	PSD			0	6	66		100		0	
		PSD-P			0	0	13		50		0	
		Wr				116	116		118		109	
	Walleye	PSD	75	65	86	83	66		71	96	86	
		PSD-P	23	25	14	25	44		27	40	31	
		Wr	94	95	103	97	94		85	90	89	
	Yellow Perch	PSD	49	79	77	92	34		84	53	17	
		PSD-P	44	24	8	67	18		46	17	10	
		Wr	110	104	106	101	94		92	90	96	

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+
2011	212	151 (78)	227 (15)	282 (119)							

Species: Walleye

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2016	139		304 (2)		434 (3)	486 (26)	491 (25)	507 (16)	527 (6)	536 (13)	560 (49)
2015	110	174 (4)	305 (14)	408 (6)	459 (23)	485 (23)	516 (15)	521 (7)	560 (10)	593 (3)	609 (6)
2014	134	179 (14)	313 (3)	402 (22)	449 (22)	499 (17)	486 (10)	528 (8)	535 (10)	577 (8)	565 (17)
2013	124	208 (1)	309 (31)	402 (36)	464 (14)	488 (6)	512 (5)	543 (15)	586 (5)		592 (11)
2011	82	221 (22)	367 (22)	452 (6)	487 (4)	531 (8)	530 (6)		574 (3)	597 (7)	657 (4)
2010	57	235 (5)	362 (11)	437 (8)	466 (15)	510 (7)		563 (1)	531 (7)	587 (2)	630 (1)
2009	101	226 (3)	352 (9)	406 (52)	475 (22)		534 (8)	522 (5)	567 (2)		
2008	78	189 (4)	305 (26)	432 (13)	483 (2)	510 (11)	513 (17)	562 (2)	612 (1)	620 (1)	563 (1)
2007	101	209 (61)	374 (17)	399 (2)	501 (13)	500 (5)	533 (1)		597 (1)		692 (1)

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	9		156 (2)	191 (2)	273 (2)		324 (1)	337 (2)			
2015	157	127 (21)	167 (110)	229 (14)	287 (7)	313 (4)	317 (1)				
2014	203	102 (83)	169 (26)	209 (58)	228 (30)	275 (6)	285 (1)	325 (1)			
2013	98	113 (1)	154 (13)	217 (28)	264 (51)	274 (2)	303 (4)				
2011	194	97 (3)	174 (149)	252 (18)	288 (23)	322 (1)					
2010	191	96 (26)	203 (35)	263 (121)	310 (9)						
2009	26		206 (24)	275 (2)							

Fish Condition

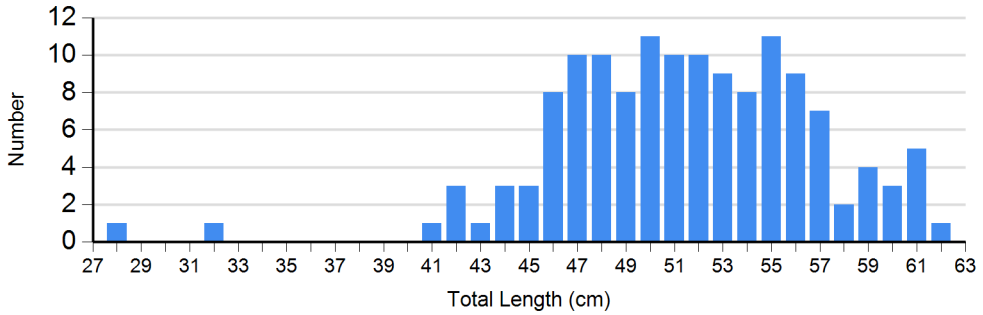
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	36	88 (0.7)	54	86 (0.8)	30	80 (0.9)	4	78 (2.7)
	2014	5	89 (1.6)	67	91 (0.7)	44	88 (1.0)	4	86 (1.7)
	2015	15	91 (1.1)	58	90 (0.8)	28	88 (0.9)	5	78 (3.4)
	2016	2	92 (1.2)	58	86 (0.7)	79	81 (0.7)	0	
Yellow Perch Gill Net	2013	15	91 (1.0)	37	93 (1.4)	42	91 (1.0)	2	98 (5.2)
	2014	57	90 (0.8)	43	91 (0.7)	19	90 (2.6)	1	90
	2015	121	96 (0.6)	10	93 (2.3)	9	94 (2.0)	6	90 (3.2)
	2016	4	98 (3.8)	0		2	94 (3.5)	3	90 (3.7)

Length Frequency Distribution

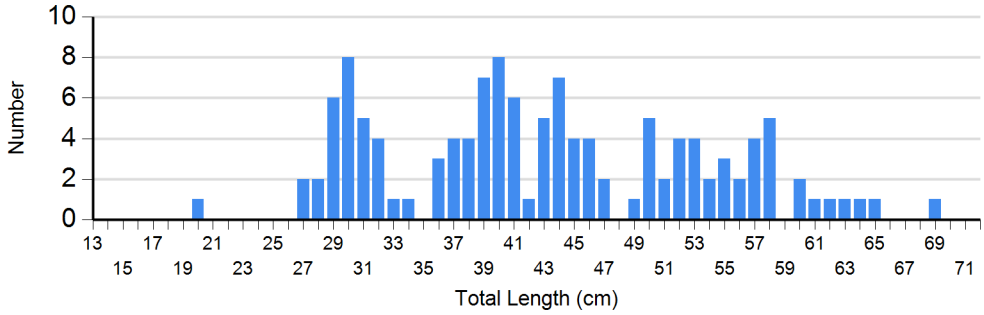
Length frequency histogram of species sampled by year.

Species: Walleye
Gear: AFS std gill net

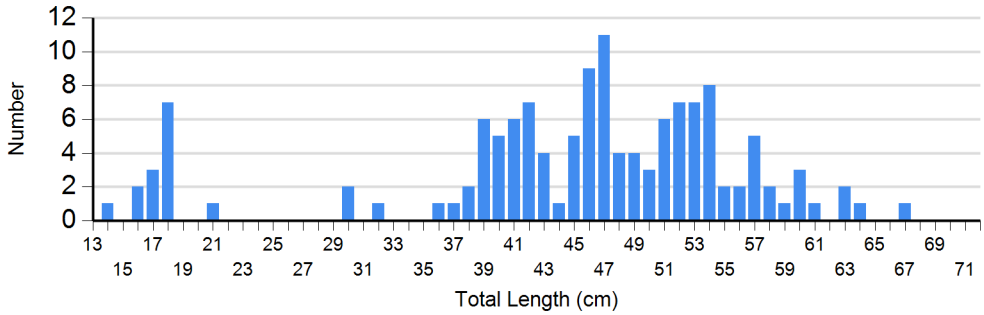


2016

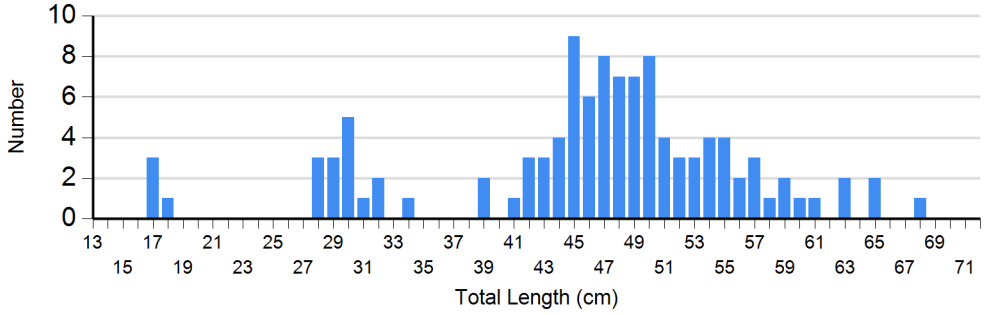
Species: Walleye
Gear: std exp gill net



2013

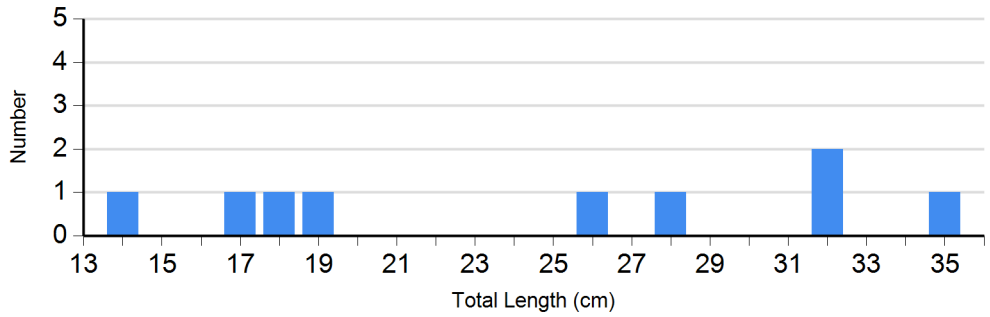


2014



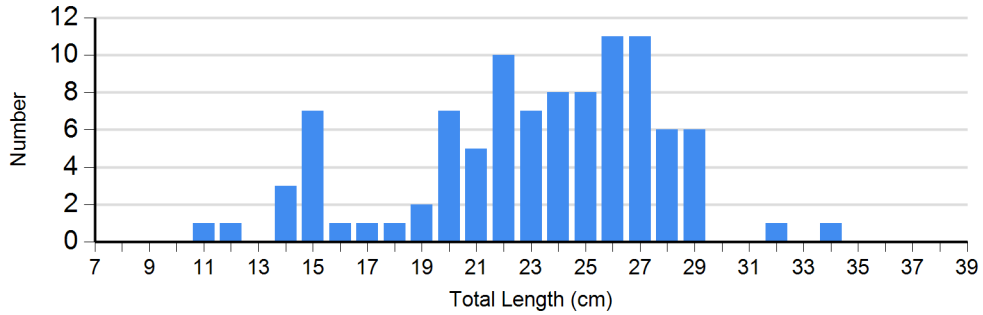
2015

Species: Yellow Perch
Gear: AFS std gill net

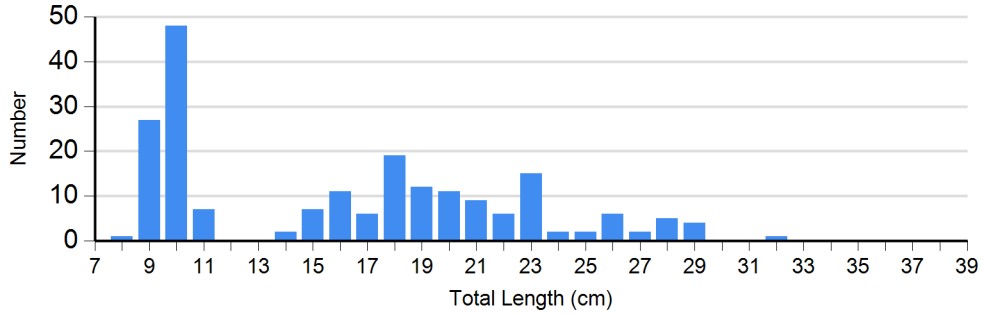


2016

Species: Yellow Perch
Gear: std exp gill net



2013



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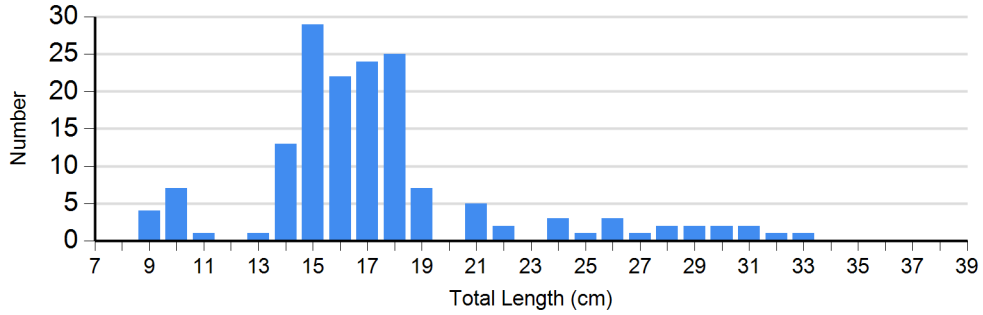
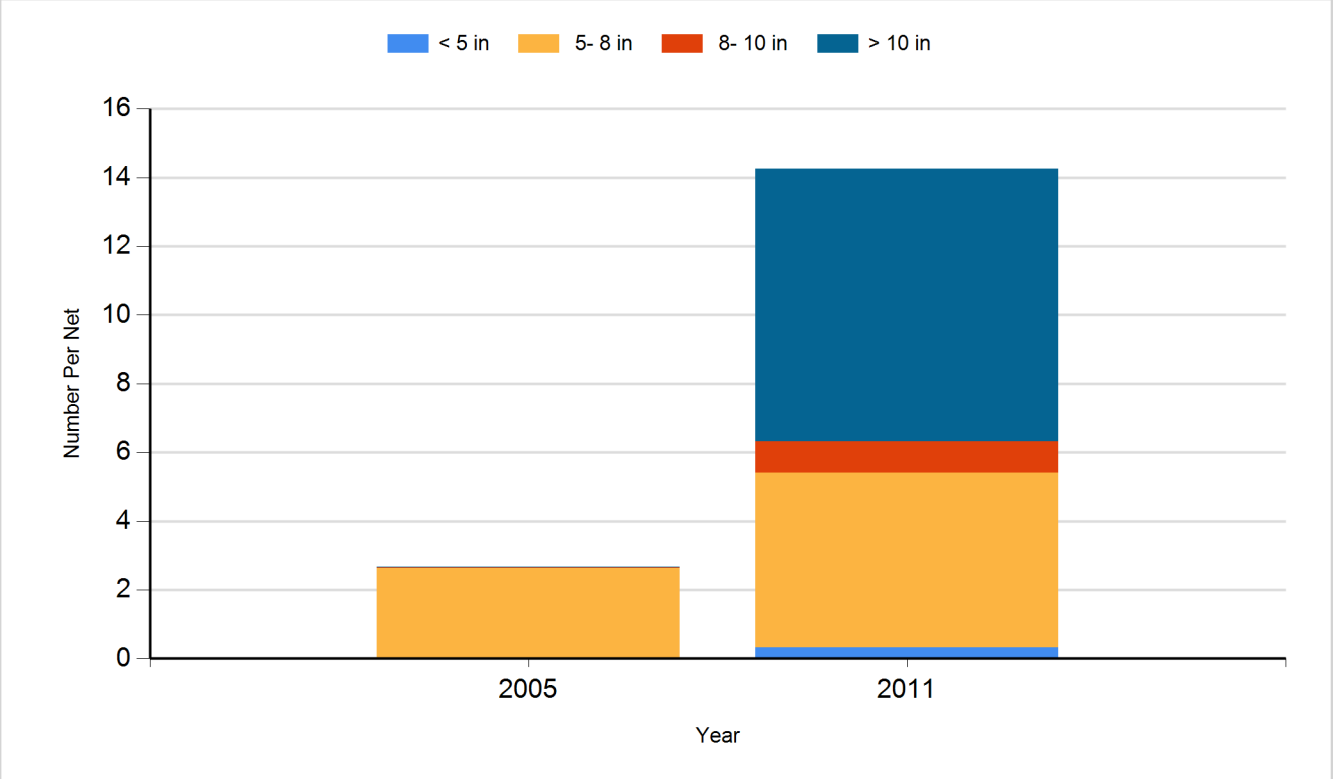


2015

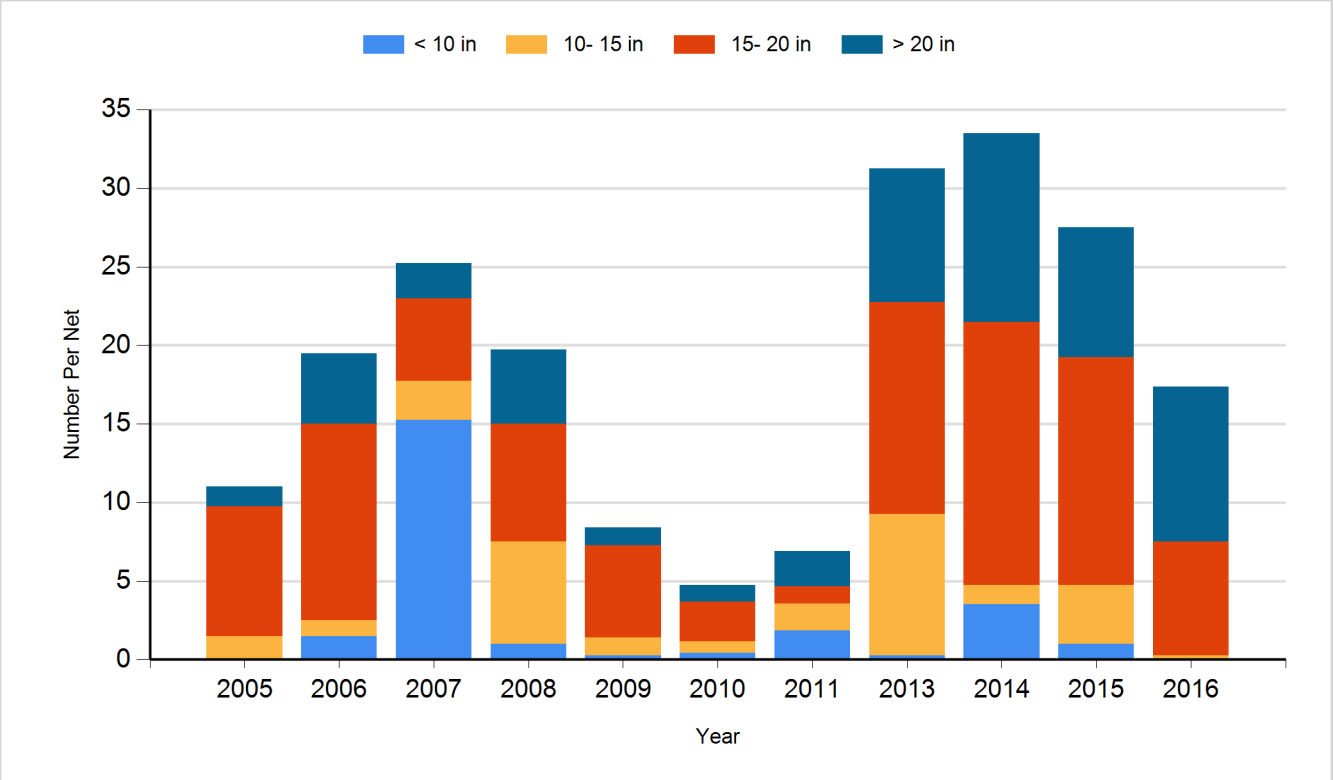
Historic Fish Sizes and Relative Abundance

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

Species: Black Crappie
Gear: Frame Net



Species: Walleye
Gear: Gill Net



Species: Yellow Perch
Gear: Gill Net