SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Swan, Turner County
VER-Lake-113-000
2015

Lake Information

Name:	Swan	**Maximum Depth:**	6 Feet
County:	Turner	**Mean Depth:**	3 Feet
Legal Description:	T97N-R53W-Sec 15-16	**OHWM Elevation:**	1,253
Surface Area:	183 Acres	**Outlet Elevation:**	1,252

Surveys and Investigations

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

Gear	Date	Effort
std exp gill net	June 25, 2015	3 net-nights
std frame net (3/8 inch)	June 25, 2015	5 net-nights

Common Fish Species Present

Walleye

Black Bullhead

Green Sunfish

White Sucker

White Crappie

Yellow Perch

Channel Catfish

Common Carp

Bigmouth Buffalo

Bluegill

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
std exp gill net	Bigmouth Buffalo	1.7	0.6	40		0			
	Black Bullhead	21.7	8.0	46	9	0			
	Channel Catfish	3.0	1.1	11		0		102	5
	Common Carp	1.7	2.3	60		0			
	Walleye	34.7	5.1	93	4	2		93	1
	White Crappie	0.7	1.3	50		50		110	18
	White Sucker	0.7	1.3	100		100			
	Yellow Perch	4.0	3.9	67		0		103	3
std frame net (3/8 inch)	Bigmouth Buffalo	0.4	0.4	100		0			
	Black Bullhead	31.8	12.4	62	5	0			
	Bluegill	0.4	0.6	50		0		133	26
	Common Carp	0.2	0.3	100		0			
	Green Sunfish	22.8	9.1	5	3	0		129	4
	Orangespotted Sunfish	0.0	0.0						
	Sunfish Hybrid	0.0	0.0						
	Walleye	1.8	1.4	100		11		94	3
	White Crappie	5.0	3.0	84		68	15	109	4
	White Sucker	10.2	3.2	100		100			

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	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Avg
large frame net	Bigmouth Buffalo		2.0		2.8				0.4			1.7
	Black Bullhead		10.0		184.2		162.0		37.8			98.5
	Black Crappie		22.3		3.6							13.0
	Bluegill		0.5				0.8					0.7
	Channel Catfish		0.3		1.0		0.6		1.2			0.8
	Common Carp		3.8		0.2		0.4		0.4			1.2
	Green Sunfish		1.0		4.0		13.0		0.2			4.6
	Northern Pike						0.4		0.2			0.3
	Orangespotted Sunfish						0.0					0.0
	Shortnose Gar		0.0				0.0		0.0			0.0
	Walleye		5.5				2.8		3.2			3.8
	White Crappie		7.8		69.6		5.8					27.7
	White Sucker		2.3		11.0		18.8		4.4			9.1
	Yellow Perch		0.3		1.4		2.0					1.2
std exp gill net	Bigmouth Buffalo		7.0		1.7				3.7	2.7	1.7	3.4
	Black Bullhead		6.3		5.7		21.3		8.0	13.7	21.7	12.8
	Black Crappie		1.0									1.0
	Channel Catfish		3.3		2.0		0.0			0.7	3.0	1.8
	Common Carp		2.7		0.7		1.0		2.3	0.3	1.7	1.5
	River Carpsucker								0.3			0.3
	Shortnose Gar						0.0					0.0
	Sunfish Hybrid									0.0		0.0
	Walleye		3.0		1.3		10.0		2.3	20.3	34.7	11.9
	White Crappie		2.0		13.7		0.7				0.7	4.3
	White Sucker		1.0		1.3		11.3		2.3	2.3	0.7	3.2
	Yellow Perch		0.3		0.0		3.3				4.0	1.9
std frame net (3/8 inch)	Bigmouth Buffalo									0.2	0.4	0.3
	Black Bullhead									40.4	31.8	36.1
	Bluegill									0.4	0.4	0.4
	Channel Catfish									0.4		0.4
	Common Carp									2.4	0.2	1.3
	Green Sunfish									0.4	22.8	11.6
	Orangespotted Sunfish										0.0	0.0

		CPUE										
Gear	Species	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Avg
std frame net (3/8 inch)	Sunfish Hybrid									0.0	0.0	0.0
	Walleye									2.4	1.8	2.1
	White Crappie									5.0	5.0	5.0
	White Sucker									10.6	10.2	10.4

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	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
large frame net	Black Crappie	PSD		81		6						
		PSD-P		1		0						
		Wr		97		101						
	Northern Pike	PSD						50		100		
		PSD-P						0		0		
		Wr						85		99		
	Walleye	PSD		5				21		88		
		PSD-P		5				7		31		
		Wr		80				86		87		
	Yellow Perch	PSD		0		29		0				
		PSD-P		0		0		0				
		Wr		95		64		109				
std exp gill net	Black Crappie	PSD		100								
		PSD-P		0								
		Wr		102								
	Walleye	PSD		0		100		7		29	18	93
		PSD-P		0		25		0		14	2	2
		Wr		80		84		93		92	87	93
	Yellow Perch	PSD		0		0		0				67
		PSD-P		0		0		0				0
		Wr		76				101				103
std frame net (3/8 inch)	Walleye	PSD									83	100
		PSD-P									50	11
		Wr									88	94

Fish Condition

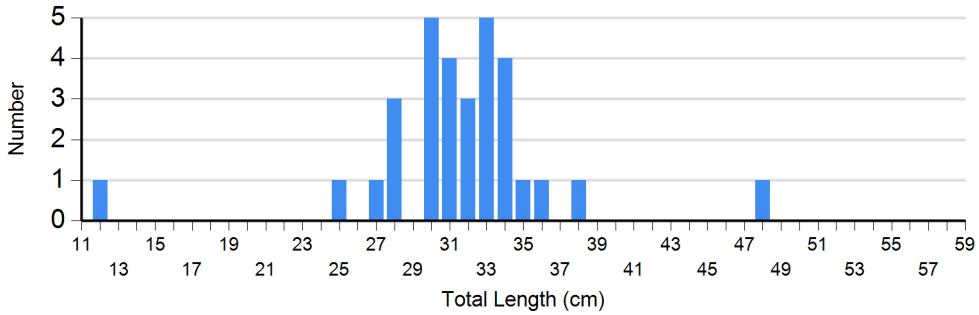
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2011	28	93 (1.2)	2	81 (14.0)	0		0	
	2013	5	93 (2.5)	1	88	1	88	0	
	2014	50	87 (1.1)	10	87 (1.2)	1	81	0	
	2015	7	97 (3.5)	95	93 (0.5)	2	87 (5.0)	0	
Yellow Perch Gill Net	2011	10	101 (2.8)	0		0		0	
	2015	4	105 (6.4)	8	102 (2.7)	0		0	

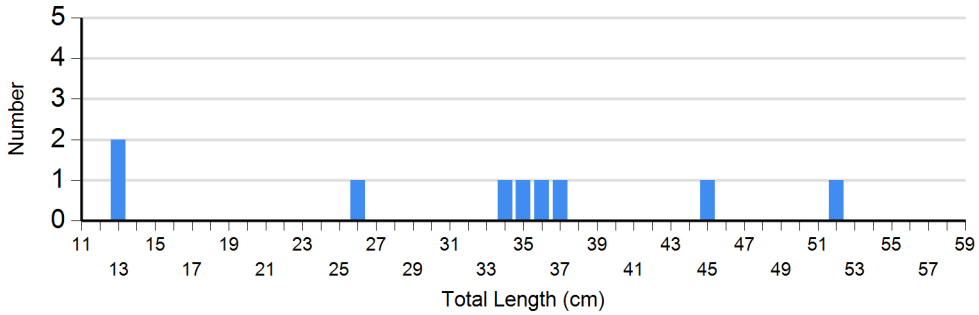
Length Frequency Distribution

Length frequency histogram of species sampled by year.

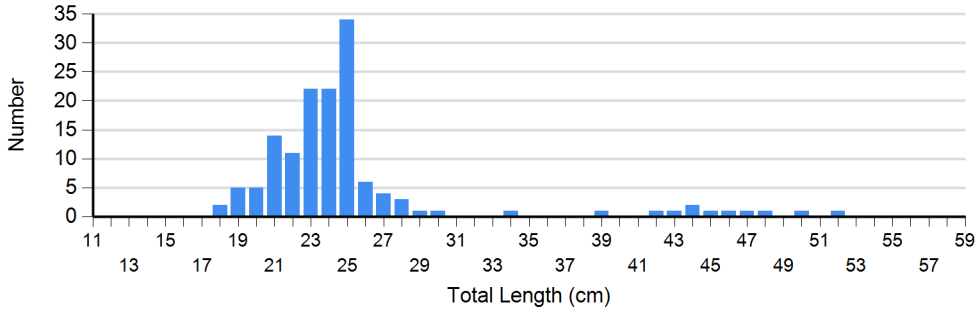
Species: Walleye
Gear: std exp gill net



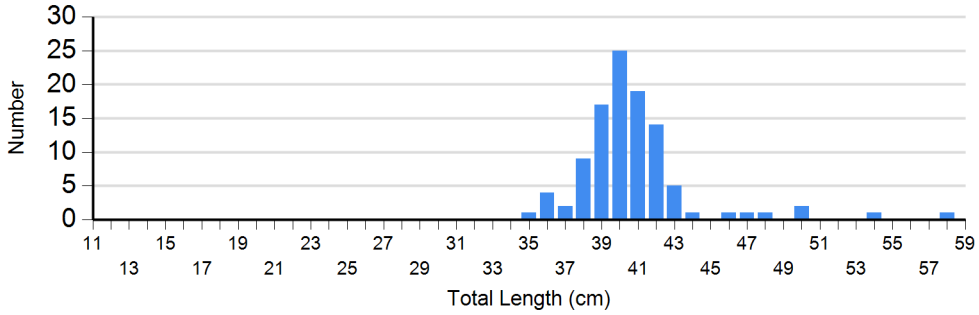
2011



2013



2014



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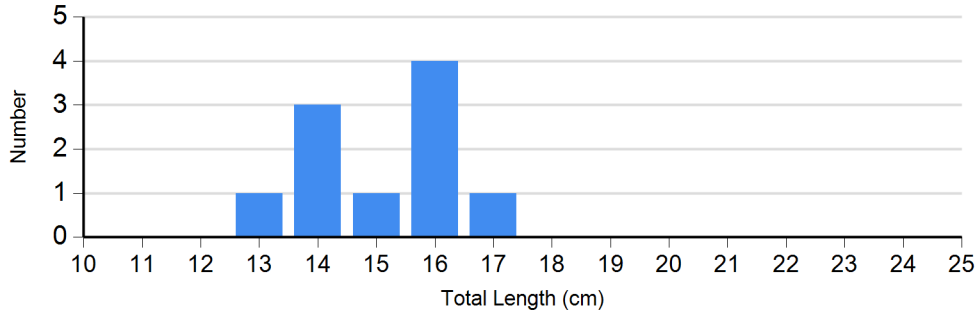
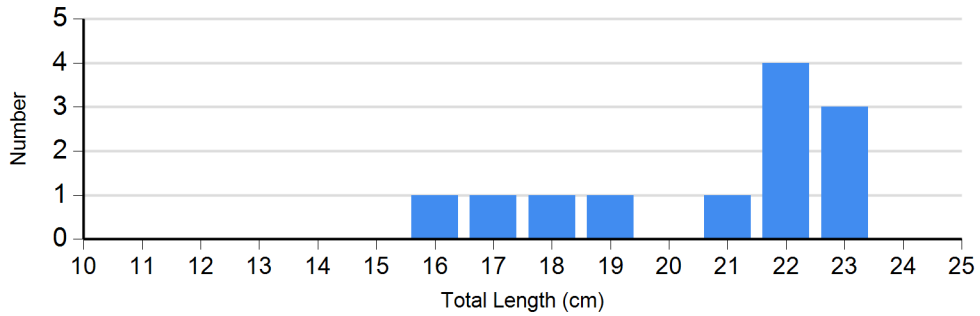
Species: Yellow Perch
Gear: std exp gill net



2011

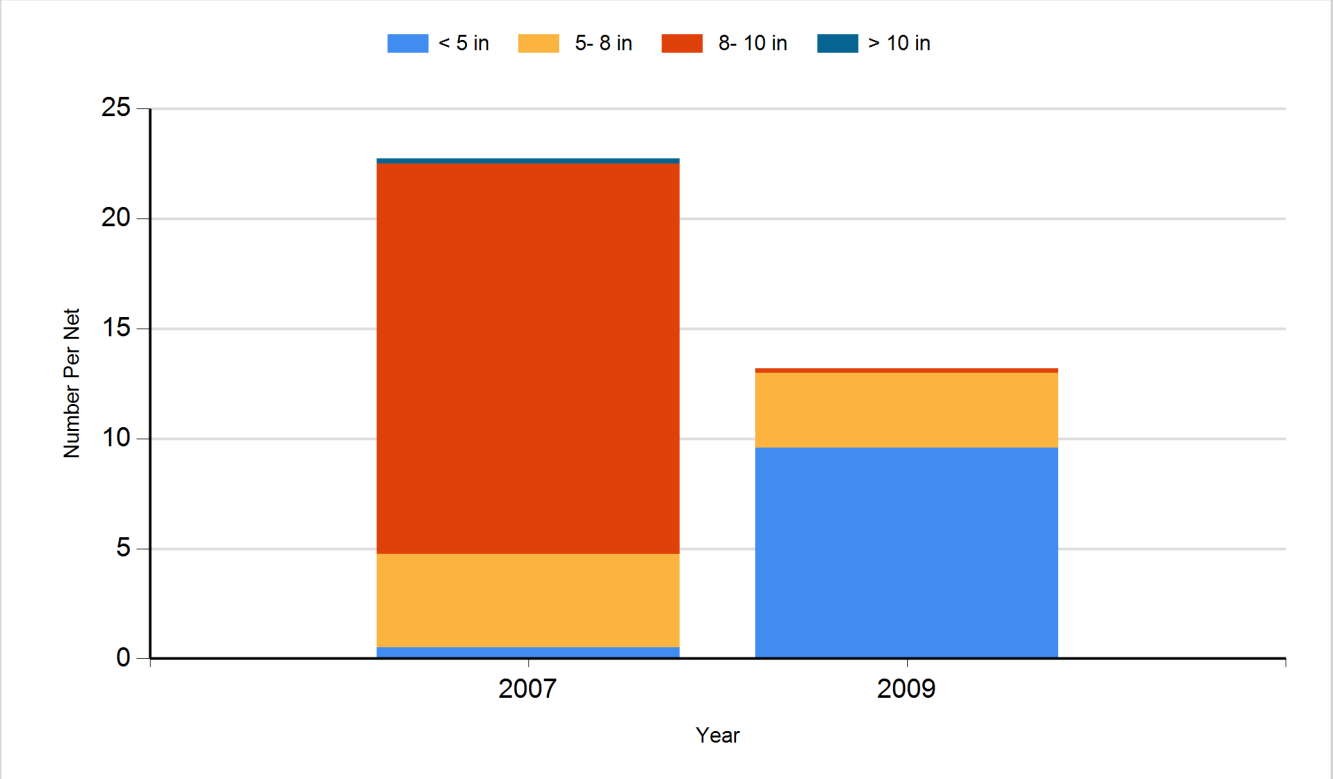


2015

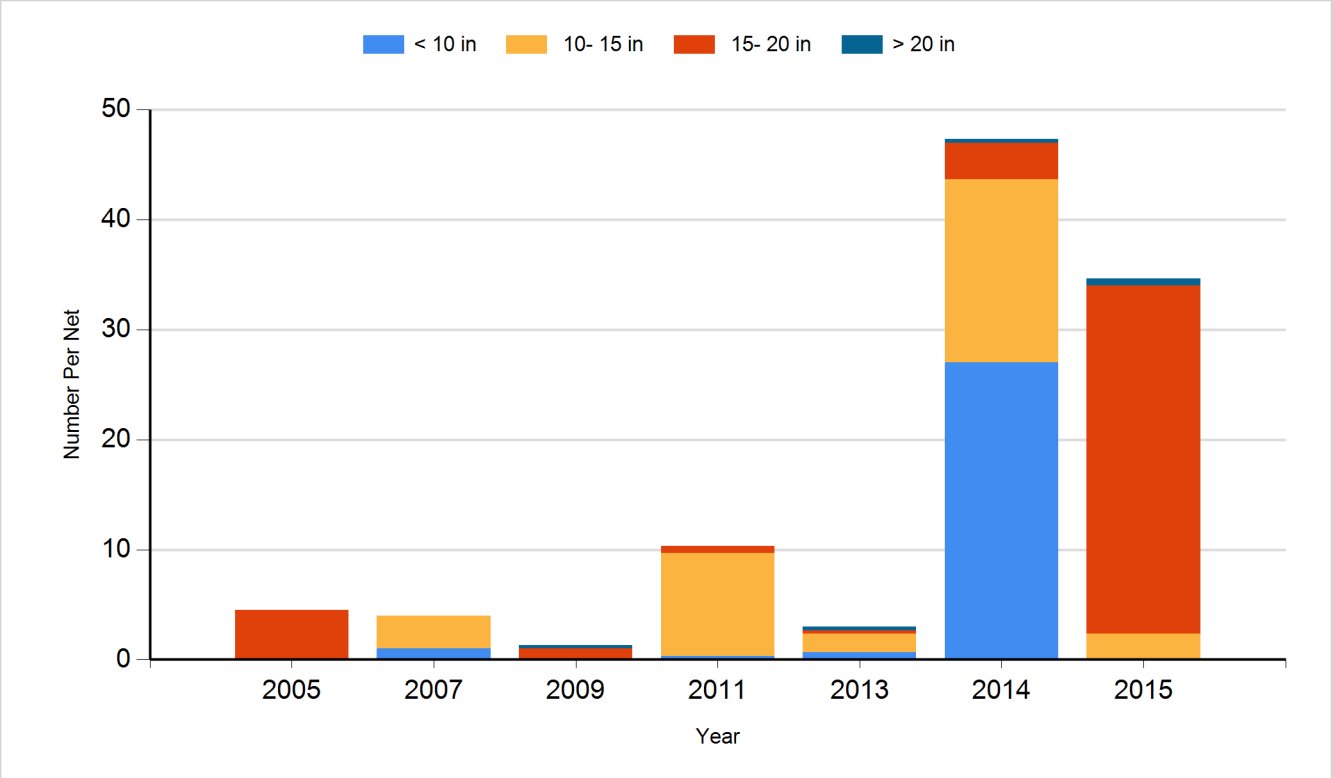
Historic Fish Sizes and Relative Abundance

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

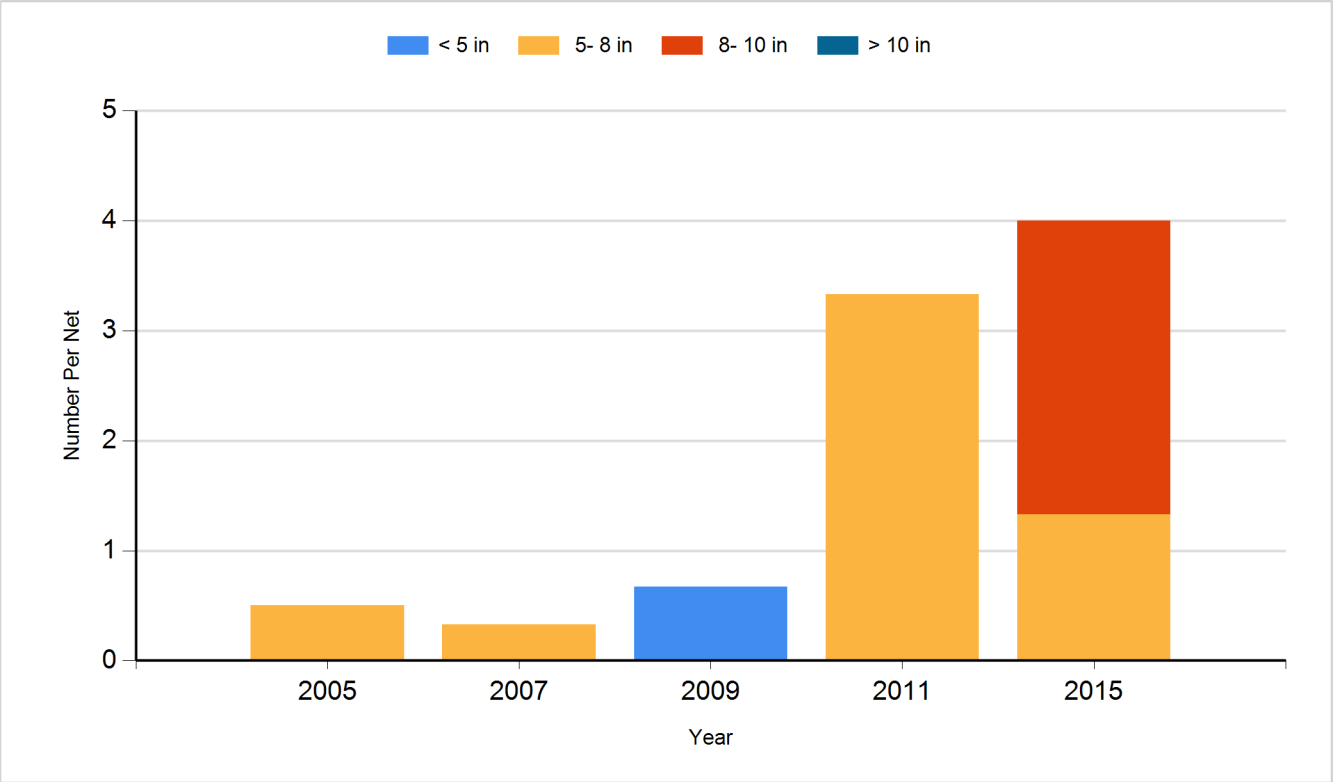
Species: Black Crappie
Gear: Frame Net



Species: Walleye
Gear: Gill Net



Species: Yellow Perch
Gear: Gill Net



Fish Stocking

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

Year	Species	Size	Number
2005	Walleye	Fingerling	5,984
2006	Black Crappie	Adult	4,892
2006	Walleye	Small Fingerling	18,265
2006	Yellow Perch	Juvenile	3,960
2009	Walleye	Large Fingerling	1,080
2010	Walleye	Small Fingerling	18,200
2011	Walleye	Large Fingerling	438
2011	Yellow Perch	Adult	2,260
2012	Walleye	Fingerling	36,750
2013	Walleye	Small Fingerling	20,000
2014	Walleye	Fry	232,000