SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Flat Creek Dam, Perkins County
GRA-Lake-767-000
2015

Lake Information

Name: Flat Creek Dam

County: Perkins

Surface Area: 164 Acres

Surveys and Investigations

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

Gear	Date	Effort
frame net (std 3/4 in)	May 27, 2015	16 net-nights
std exp gill net	May 27, 2015	4 net-nights

Common Fish Species Present

Yellow Perch

Walleye

Northern Pike

Channel Catfish

Bluegill

Black Crappie

Black Bullhead

Common Carp

White Sucker

White Crappie

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
frame net (std 3/4 in)	Black Bullhead	80.1	12.2	0		0		77	0
	Black Crappie	0.5	0.2	100		0		98	1
	Common Carp	4.9	2.0	0		0		85	1
	Northern Pike	0.5	0.2	100		50		84	1
	Walleye	1.0	0.2	63	20	25		87	2
	White Crappie	0.4	0.2	100		100		100	5
	White Sucker	0.1	0.1	0		0		92	0
	Yellow Perch	0.1	0.1	0		0		95	0
std exp gill net	Black Bullhead	23.5	3.3	0		0		89	1
	Common Carp	7.5	0.5	7		7		81	4
	Northern Pike	2.0	0.9	75		75		88	2
	Walleye	0.5	0.5	0		0		80	0
	White Sucker	1.0	0.0	0		0		85	2

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
frame net (1/2 inch)	Black Bullhead					0.0						0.0
	Common Carp					0.3						0.3
	Walleye					2.3						2.3
	Yellow Perch					4.3						4.3
frame net (std 3/4 in)	Black Bullhead							19.5	99.0	63.8	80.1	65.6
	Black Crappie									0.1	0.5	0.3
	Channel Catfish							0.3				0.3
	Common Carp							0.0	6.5	2.9	4.9	3.6
	Green Sunfish									0.1		0.1
	Northern Pike							1.0	0.8	2.6	0.5	1.2
	Walleye							2.8	1.0	0.8	1.0	1.4
	White Crappie										0.4	0.4
	White Sucker								0.3		0.1	0.2
	Yellow Perch							1.8	1.3	1.3	0.1	1.1
std exp gill net	Black Bullhead					1.0				79.0	23.5	34.5
	Common Carp					1.0				17.0	7.5	8.5
	Northern Pike					10.0				2.5	2.0	4.8
	Walleye					3.0				1.0	0.5	1.5
	White Sucker									1.0	1.0	1.0
	Yellow Perch					9.0						9.0
std exp gill net (150 ft)	Black Bullhead							4.0	32.0			18.0
	Common Carp							0.0	1.0			0.5
	Northern Pike							4.0	2.0			3.0
	Walleye							5.0	1.0			3.0
	Yellow Perch							2.0				2.0

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
frame net (1/2 inch)	Walleye	PSD					0					
		PSD-P					0					
		Wr					87					
	Yellow Perch	PSD					12					
		PSD-P					6					
		Wr					92					
frame net (std 3/4 in)	Black Crappie	PSD									100	100
		PSD-P									0	0
		Wr									91	98
	Northern Pike	PSD							100	100	100	100
		PSD-P							50	67	81	50
		Wr							91	97	88	84
	Walleye	PSD							27	100	50	63
		PSD-P							0	50	50	25
		Wr							75	91	83	87
	Yellow Perch	PSD							0	0	10	0
		PSD-P							0	0	0	0
		Wr							88	82	76	95
std exp gill net	Northern Pike	PSD					0				100	75
		PSD-P					0				80	75
		Wr					103				96	88
	Walleye	PSD					0				100	0
		PSD-P					0				50	0
		Wr					85				93	80
	Yellow Perch	PSD					0					
		PSD-P					0					
std exp gill net (150 ft)	Northern Pike	PSD							100	100		
		PSD-P							75	100		
		Wr							102	95		
	Walleye	PSD							40	100		
		PSD-P							20	0		

			Year									
Gear	Species	Index	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
std exp gill net (150 ft)	Walleye	Wr							85	86		
	Yellow Perch	PSD							0			
		PSD-P							0			
		Wr							81			

Fish Condition

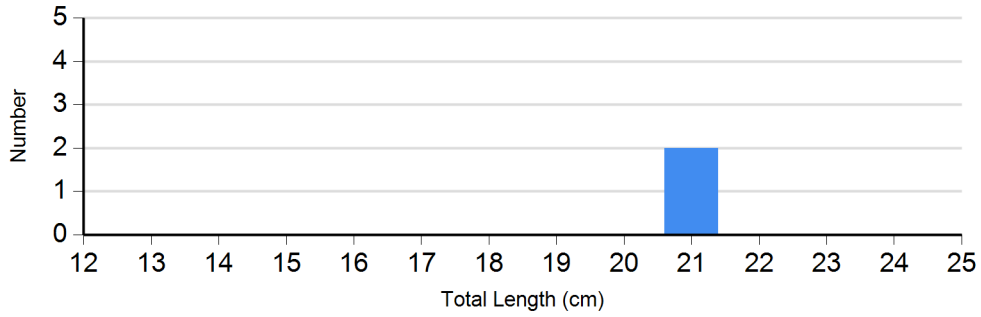
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2014	0		2	91 (0.0)	0		0	
	2015	0		8	98 (0.7)	0		0	
Northern Pike Gill Net	2012	0		2	94 (0.0)	6	104 (1.7)	0	
	2013	0		0		4	95 (1.3)	0	
	2014	0		2	85 (0.0)	8	98 (2.0)	0	
	2015	2	89 (0.0)	0		4	87 (3.1)	2	
Walleye Gill Net	2012	6	82 (2.6)	2	85 (0.0)	2	95 (0.0)	0	
	2013	0		2	86 (0.0)	0		0	
	2014	0		2	102 (0.0)	2	84 (0.0)	0	
	2015	2	80 (0.0)	0		0		0	
Yellow Perch Gill Net	2012	4	81 (0.0)	0		0		0	

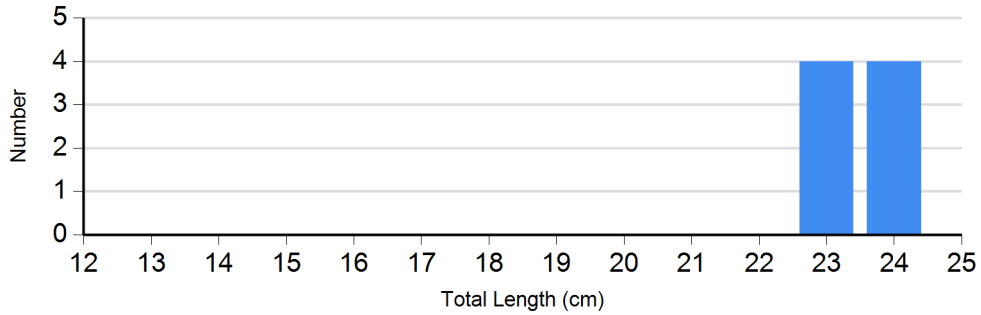
Length Frequency Distribution

Length frequency histogram of species sampled by year.

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

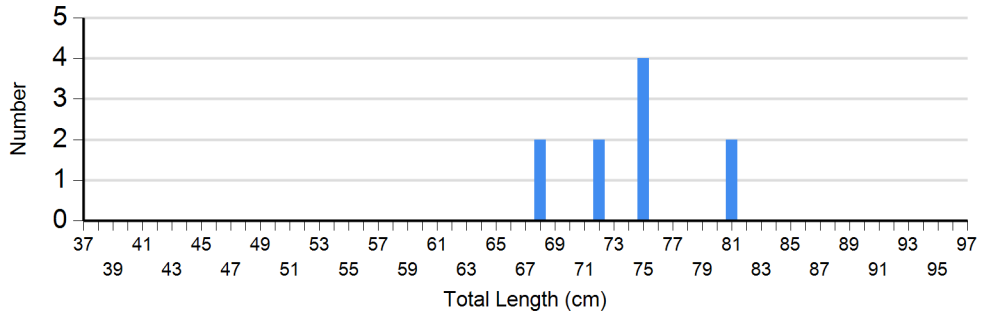


2014

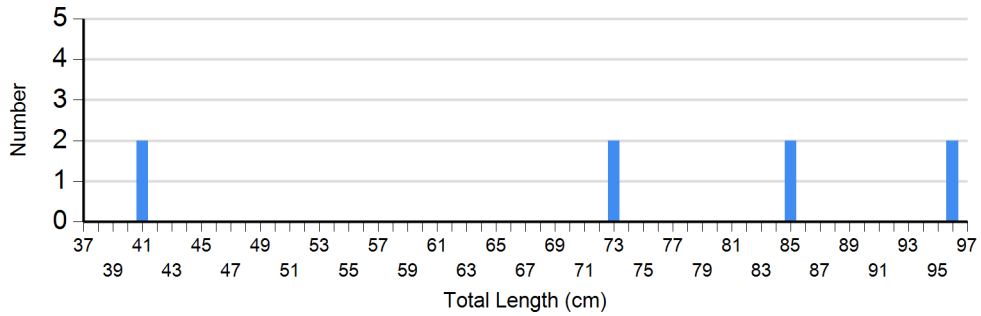


2015

Species: Northern Pike
Gear: std exp gill net

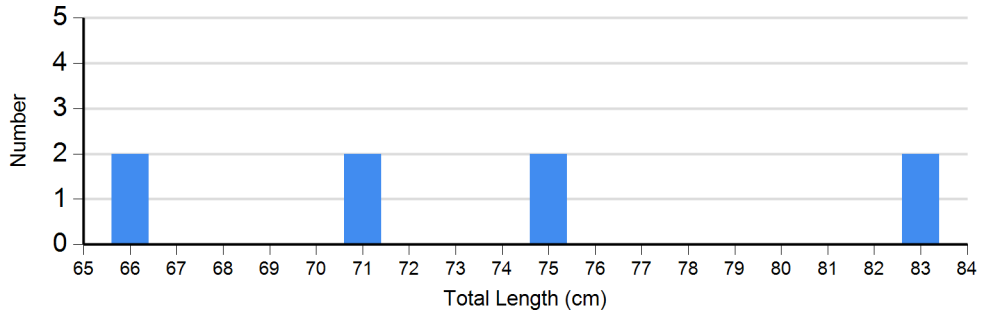


2014

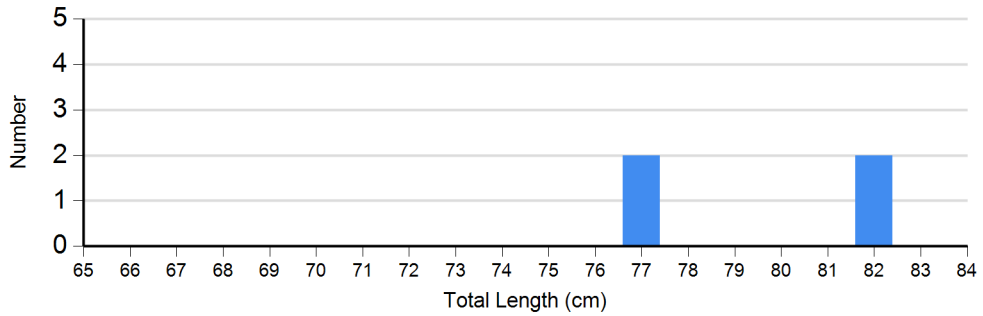


2015

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

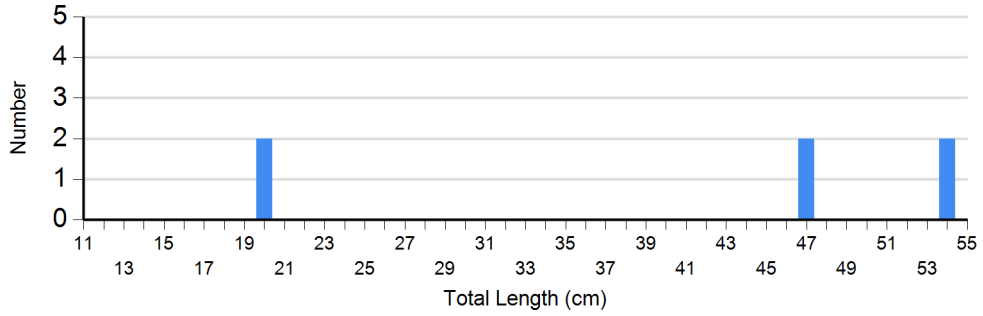


2012

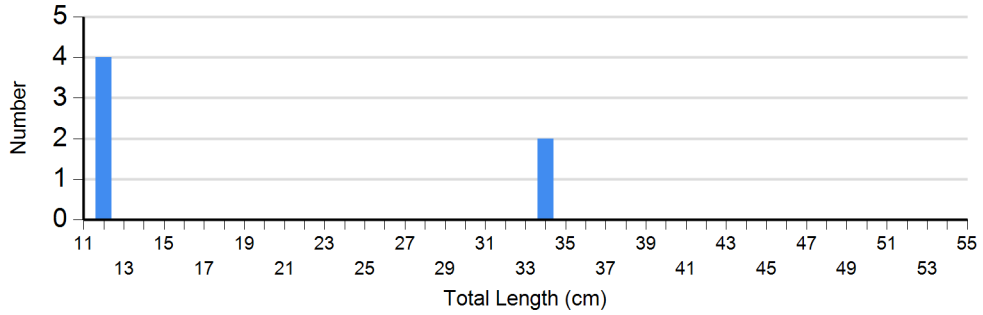


2013

Species: Walleye
Gear: std exp gill net

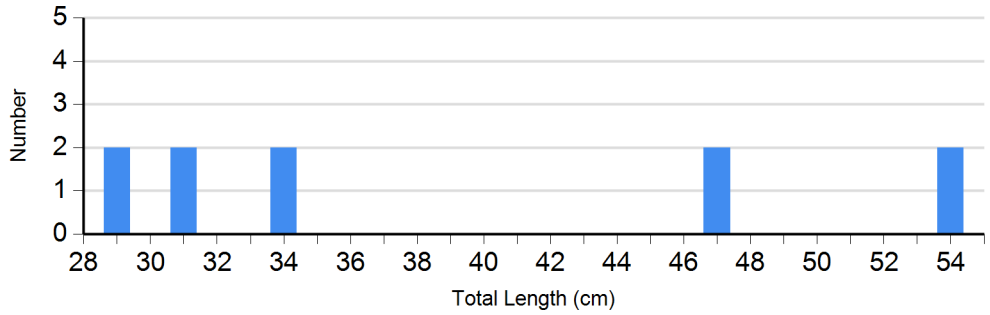


2014

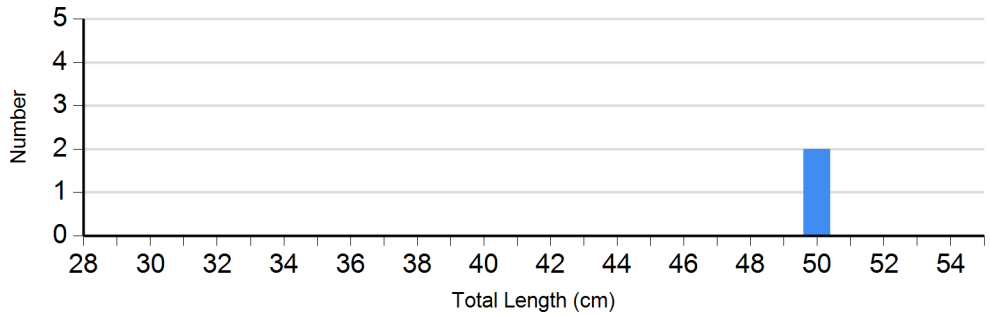


2015

Species: Walleye
Gear: std exp gill net (150 ft)

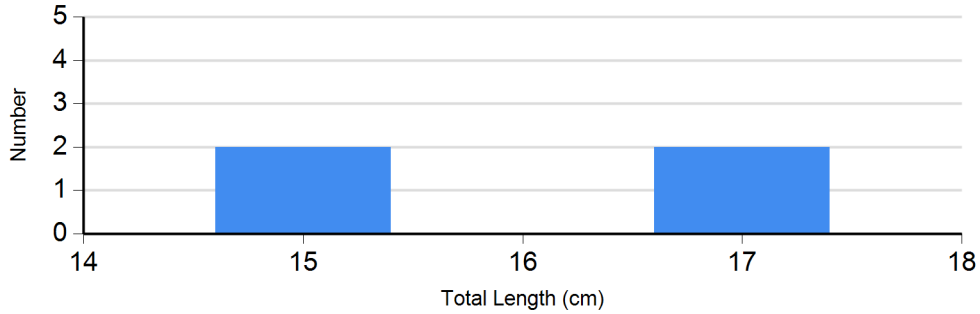


2012



2013

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

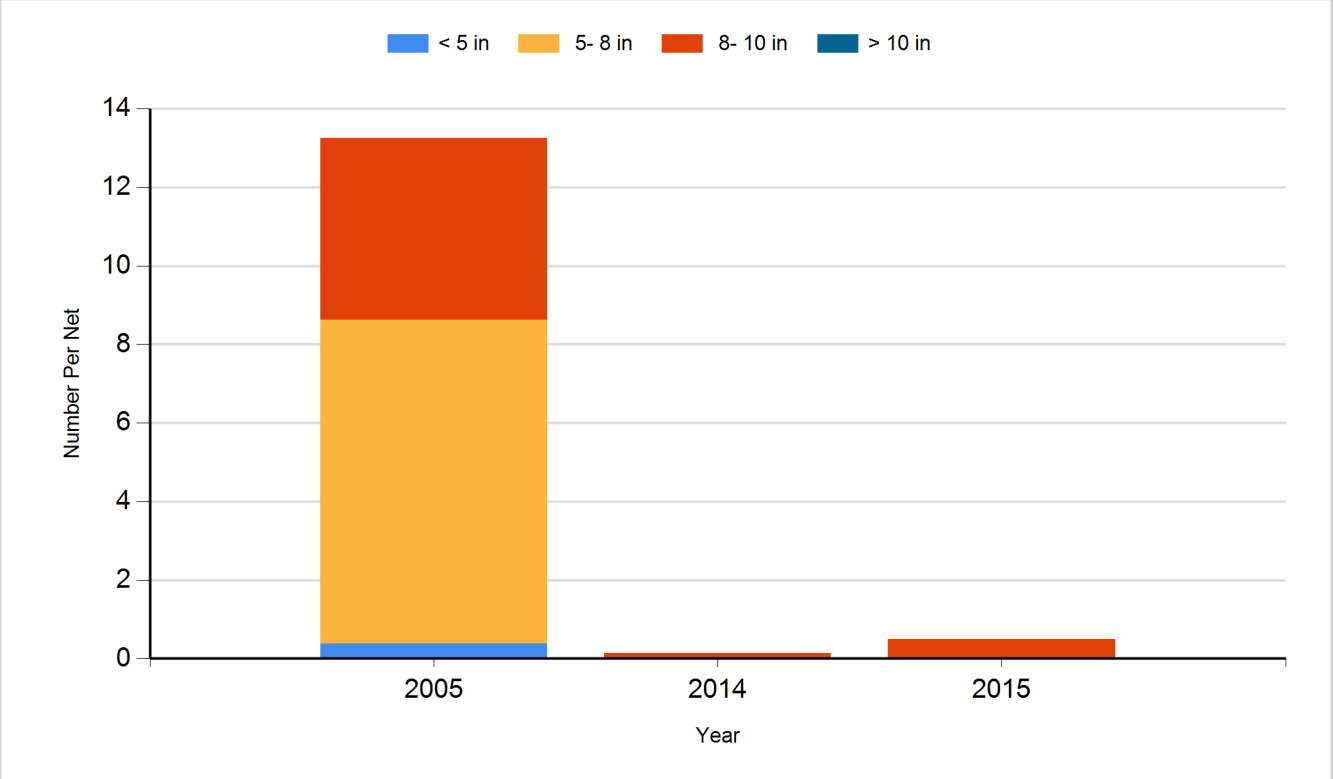


2012

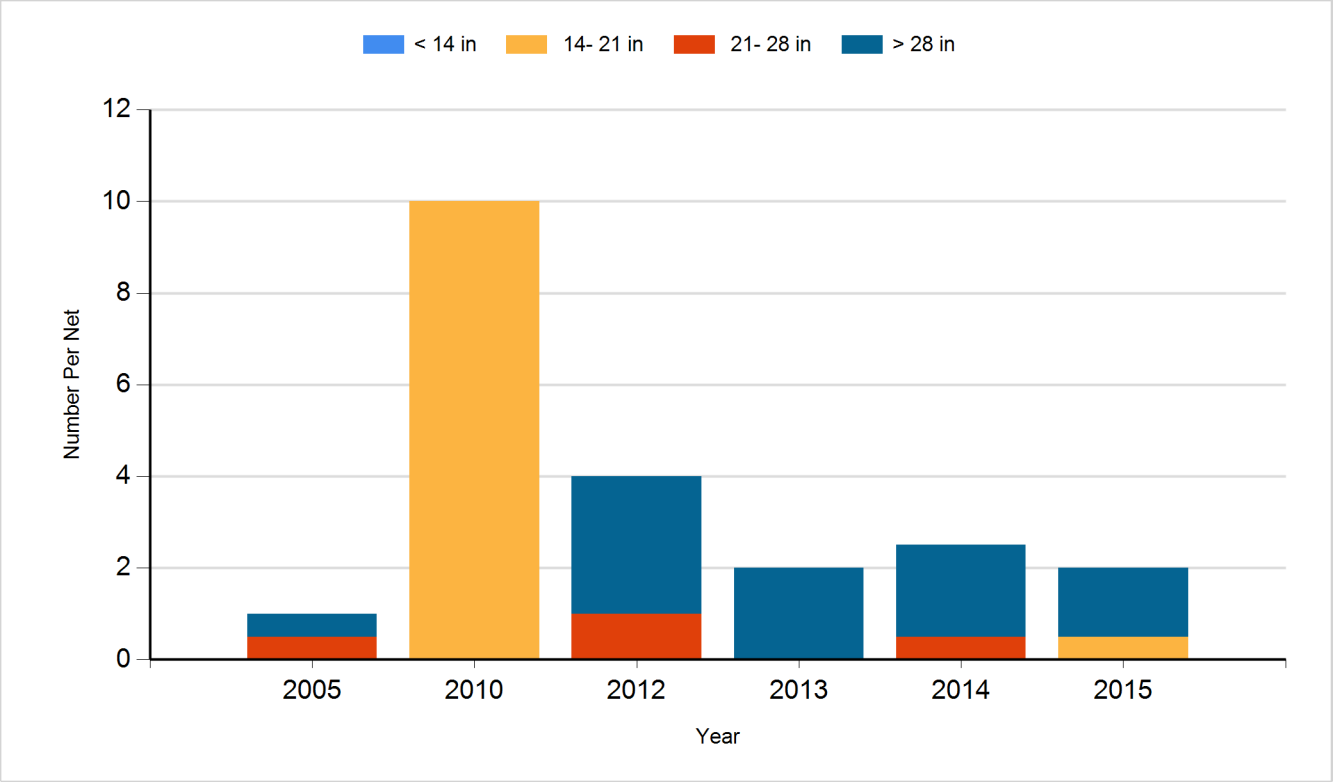
Historic Fish Sizes and Relative Abundance

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

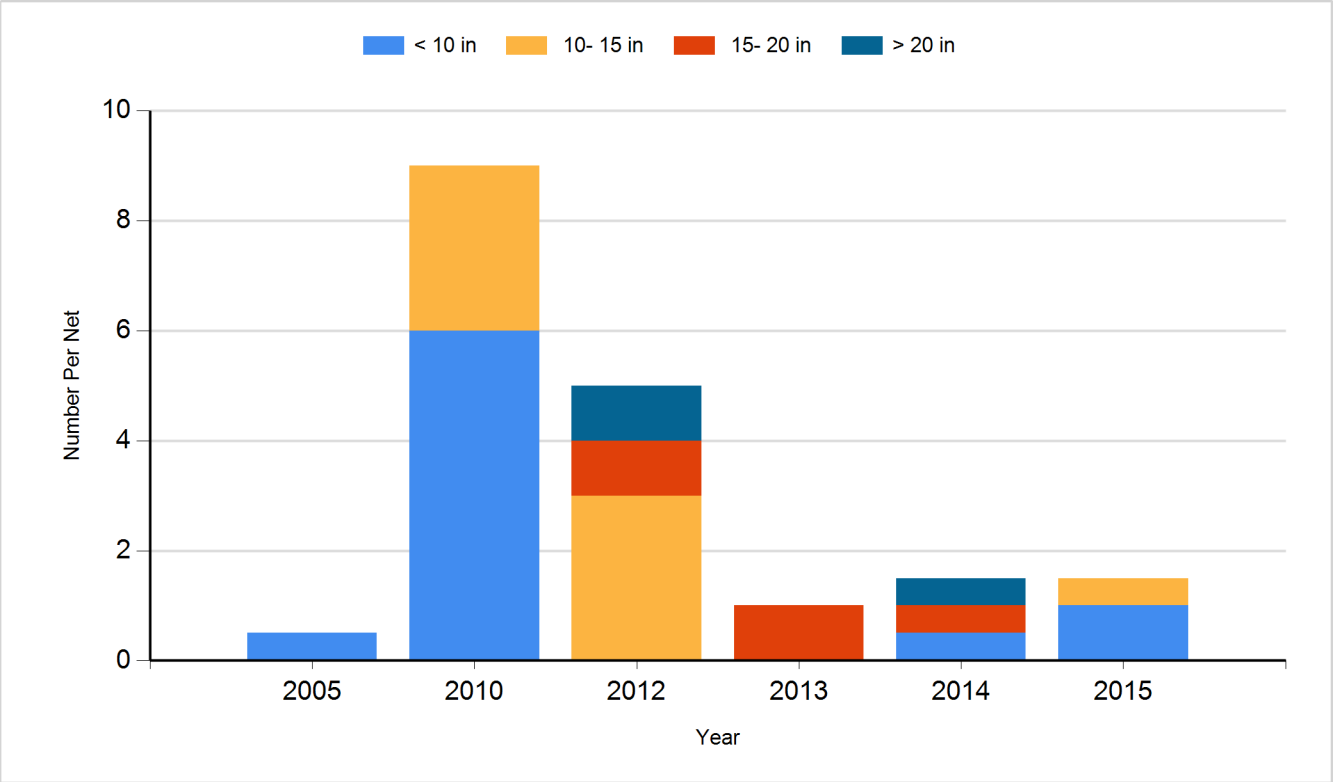
Species: Black Crappie
Gear: Frame Net



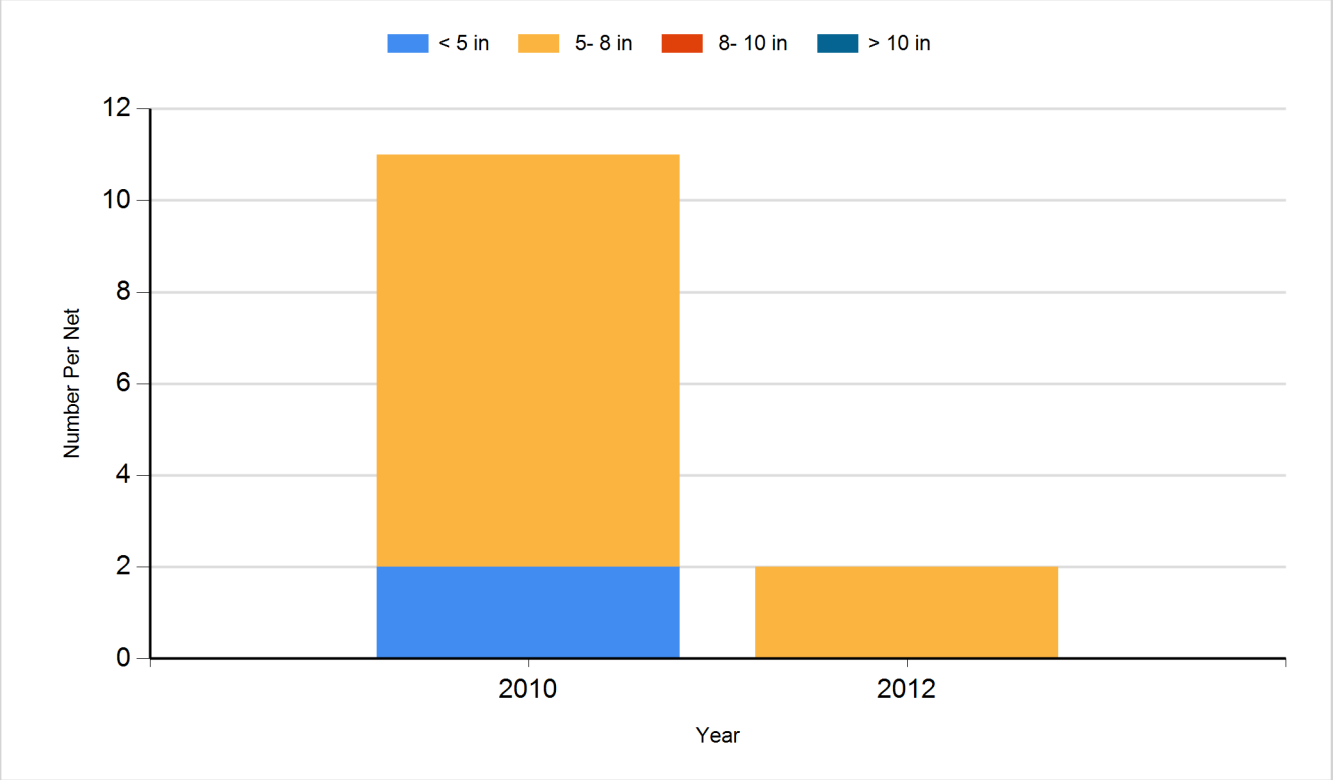
Species: Northern Pike
Gear: Gill Net



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
2004	Largemouth Bass	Juvenile	624
2004	Walleye	Fingerling	6,355
2009	Largemouth Bass	Fingerling	1,000
2009	Walleye	Fingerling	46,625
2010	Largemouth Bass	Fingerling	1,000
2010	Northern Pike	Fry	191,200
2010	Walleye	Fingerling	20,000
2010	Yellow Perch	Adult	680
2011	Largemouth Bass	Fingerling	7,800
2011	Northern Pike	Fry	30,000
2011	Walleye	Small Fingerling	13,930
2012	Largemouth Bass	Fingerling	14,460
2013	Walleye	Large Fingerling	4,000
2014	Largemouth Bass	Adult	100
2014	Walleye	Small Fingerling	19,800