SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Simon, Potter County
LLO-Lake-2144-000
2020

Lake Information

Name: Simon

County: Potter

Legal Description: T120-R74-S29

Surface Area: 47 Acres

Maximum Depth: 15 Feet

Mean Depth: 9 Feet

Surveys and Investigations

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

Gear	Date	Effort
boat shocker (night)	Sep 23, 2020	3600 seconds
frame net (std 3/4 in)	Jun 29, 2020	10 net-nights

Common Fish Species Present

Largemouth Bass

Black Crappie

Northern Pike

Yellow Perch

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).

A statewide effort to help make netting efforts comparable to all waters sampled across the state, occurred in 2017, with a switch to American Fisheries Society gill nets. Past gill netting efforts were completed with different style/types of nets and are not comparable side by side.

- **AFS std gill net** – 80 ft experimental gill net containing eight panels (10 ft each) of varying monofilament meshes of 0.75, 1.00, 1.25, 1.50, 1.75, 2.00, 2.25 and 2.50 inches.
- **std experimental gill net for non-Missouri River waters** - 150 ft experimental gill net containing six panels (25 ft each) of varying monofilament meshes of 0.5, 0.75, 1.00, 1.25, 1.50 and 2.00 inches.
- s**td experimental gill net for Missouri River reservoirs** – 300 ft experimental gill net containing six panels (50 ft each) of varying multifilament meshes of 0.5, 0.75, 1.00, 1.25, 1.50 and 2.00 inches.

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

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)
Black Bullhead	6	15	9	23	12	30	15	38	18	46
Black Crappie	5	13	8	20	10	25	12	30	15	38
Bluegill	3	8	6	15	8	20	10	25	12	30
Brown Trout	8	20	12	30	16	40	20	50	18	46
Channel Catfish	11	28	16	41	24	61	28	71	36	91
Freshwater Drum	8	20	12	30	15	38	20	51	25	63
Lake Trout	12	30	20	50	26	65	31	80	39	100
Largemouth Bass	8	20	12	30	15	38	20	51	25	63
Muskellunge	20	51	30	76	38	97	42	107	50	127
Northern Pike	14	35	21	53	28	71	34	86	44	112
Pumpkinseed	3	8	6	15	8	20	10	25	12	30
Rainbow Trout	10	25	16	40	20	50	26	65	31	80
Rudd	6	15	10	25	12	30	15	38	19	48
Sauger	8	20	12	30	15	38	20	51	25	63
Smallmouth Bass	7	18	11	28	14	35	17	43	20	51
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
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).

*** Methods/Species that ignore stock length**

			Abundance		Stock Density Indices				Condition	
Gear	Species	Sample Size (n)	CPUE	CI-80	PSD	CI-80	PSD-P	CI-80	Wr	CI-80
boat shocker (night)	Largemouth Bass	2	2.0	1.9	0		0		126	3
frame net (std 3/4 in)	Black Crappie	57	3.3	2.0	0		0		134	2
	Largemouth Bass	20	0.8	0.6	0		0		132	6
	Northern Pike	20	0.7	0.3	14		0		93	3
	Yellow Perch	2	0.2	0.2	50		0		115	11

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.

*** Methods/Species that ignore stock length**

		CPUE										
Gear	Species	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Avg
AFS std frame net	Black Crappie							0.5				0.50
	Northern Pike							1.1				1.10
	Yellow Perch							0.2				0.20
AFS std gill net	Northern Pike							1.8				1.80
	Yellow Perch							7.5				7.50
boat shocker (night)	Largemouth Bass	3.0						1.0			2.0	2.00
frame net (std 3/4 in)	Black Crappie	10.0			0.5						3.3	4.60
	Largemouth Bass	0.6			0.0						0.8	0.47
	Northern Pike	1.3			1.1						0.7	1.03
	Yellow Perch	1.6			0.0						0.2	0.60
std exp gill net	Black Crappie	0.0			0.0							0.00
	Channel Catfish	0.0			0.0							0.00
	Northern Pike	2.5			2.0							2.25
	Yellow Perch	0.5			1.0							0.75

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	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
AFS std frame net	Black Crappie	PSD							100			
		PSD-P							40			
		Wr							112			
	Northern Pike	PSD							55			
		PSD-P							27			
		Wr							82			
	Yellow Perch	PSD							100			
		PSD-P							0			
		Wr							115			
AFS std gill net	Northern Pike	PSD							57			
		PSD-P							14			
		Wr							82			
	Yellow Perch	PSD							87			
		PSD-P							3			
		Wr							114			
boat shocker (night)	Largemouth Bass	PSD	100						100			0
		PSD-P	0						100			0
		Wr	115						138			126
frame net (std 3/4 in)	Black Crappie	PSD	33			100						0
		PSD-P	0			100						0
		Wr	113			100						134
	Largemouth Bass	PSD	0									0
		PSD-P	0									0
		Wr	115									132
	Northern Pike	PSD	31			82						14
		PSD-P	23			0						0
		Wr	90			93						93
	Yellow Perch	PSD	69									50
		PSD-P	6									0
		Wr	98									115
std exp gill net	Northern Pike	PSD	0			75						

			Year									
Gear	Species	Index	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
std exp gill net	Northern Pike	PSD-P	0			0						
		Wr	93			105						
	Yellow Perch	PSD	0			100						
		PSD-P	0			0						
		Wr	105			107						

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+
2017	5		216 (3)	260 (2)							
2011	200		185 (200)								

Species: Largemouth Bass

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2017	1										445 (1)
2011	4			374 (4)							

Species: Yellow Perch

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2017	30	143 (4)	230 (25)		314 (1)						

Fish Condition

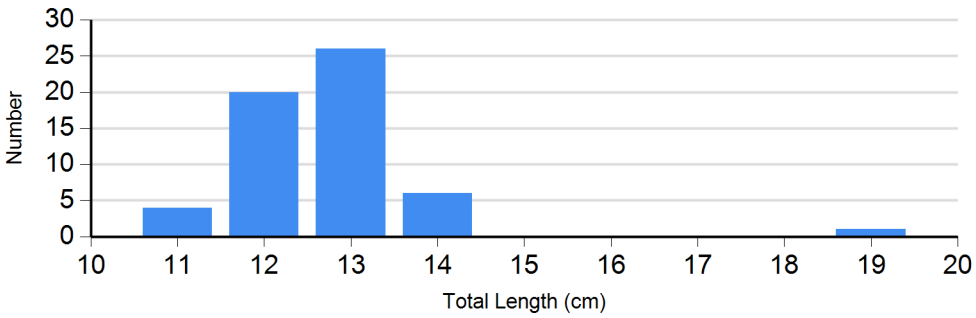
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2017	0		3	113 (1.0)	2	111 (0.8)	0	
	2020	33	134 (1.6)	0		0		0	
Largemouth Bass Electro Fishing	2017	0		0		1	138	0	
	2020	2	126 (2.5)	0		0		0	
Northern Pike Gill Net	2017	3	80 (5.3)	3	80 (1.1)	1	90	0	
Yellow Perch Gill Net	2017	4	134 (3.9)	25	112 (2.3)	0		1	98

Length Frequency Distribution

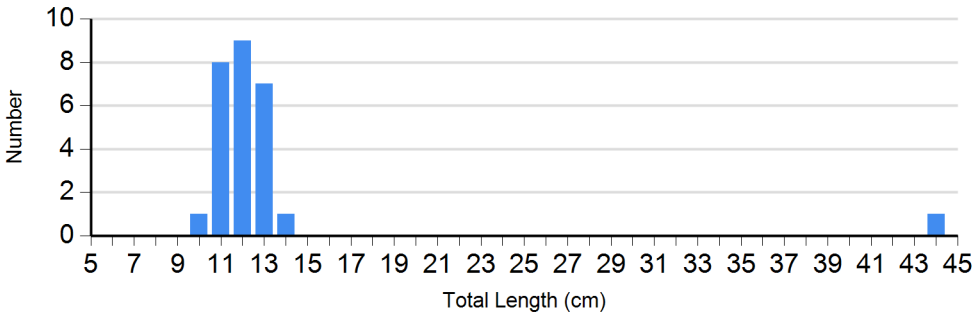
Length frequency histogram of species sampled by year.

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



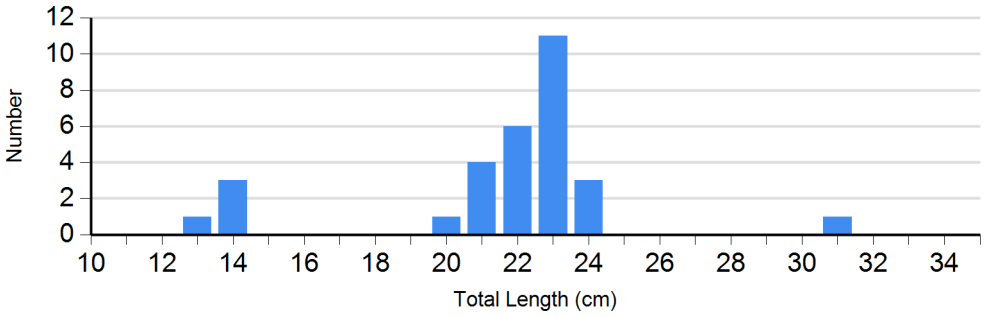
2020

Species: Largemouth Bass
Gear: boat shocker (night)



2017

Species: Yellow Perch
Gear: AFS std gill net

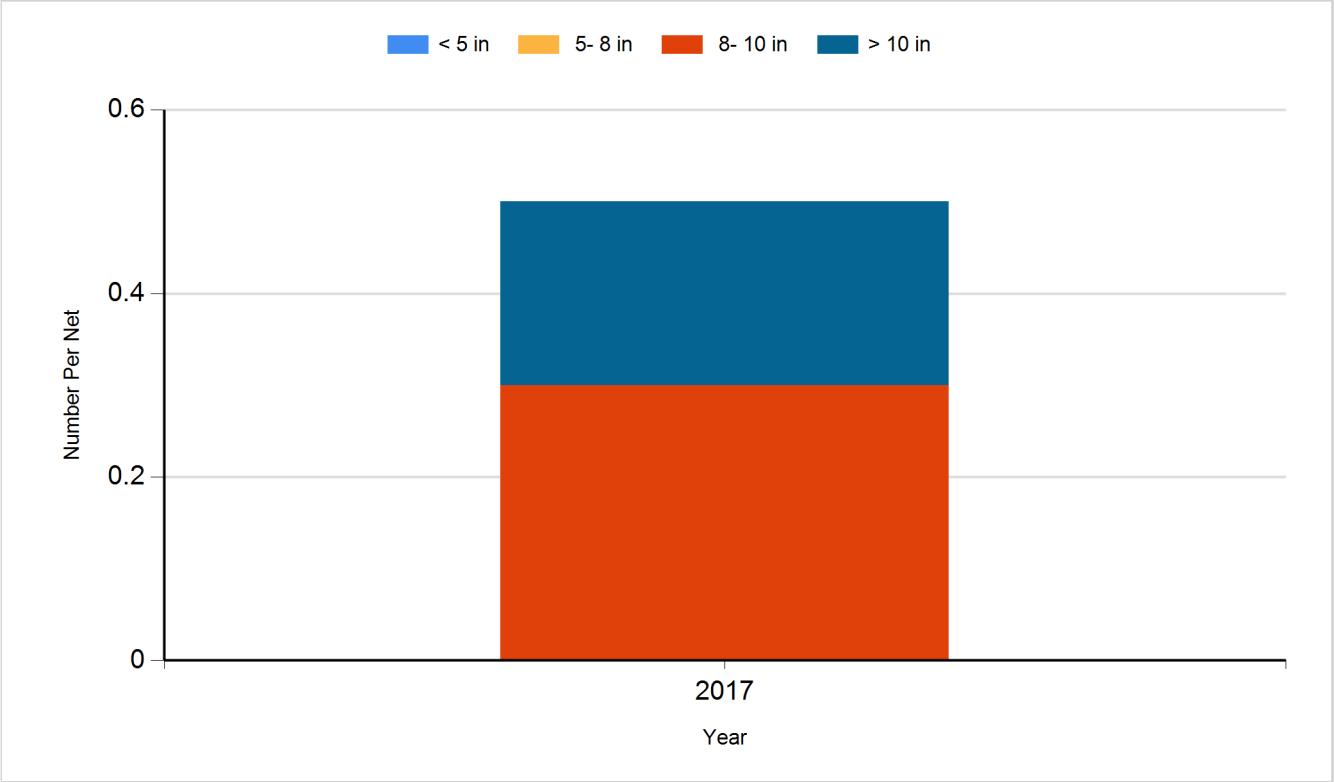


2017

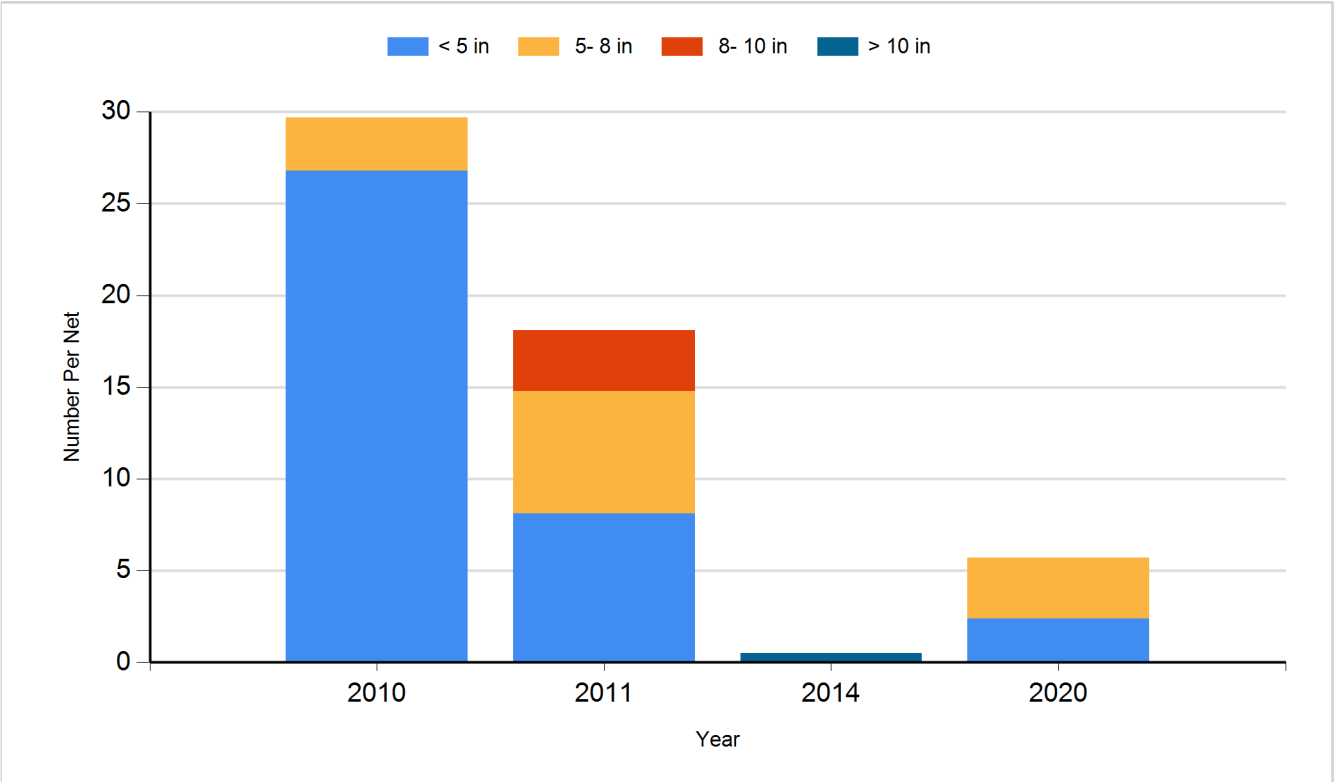
Historic Fish Sizes and Relative Abundance

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

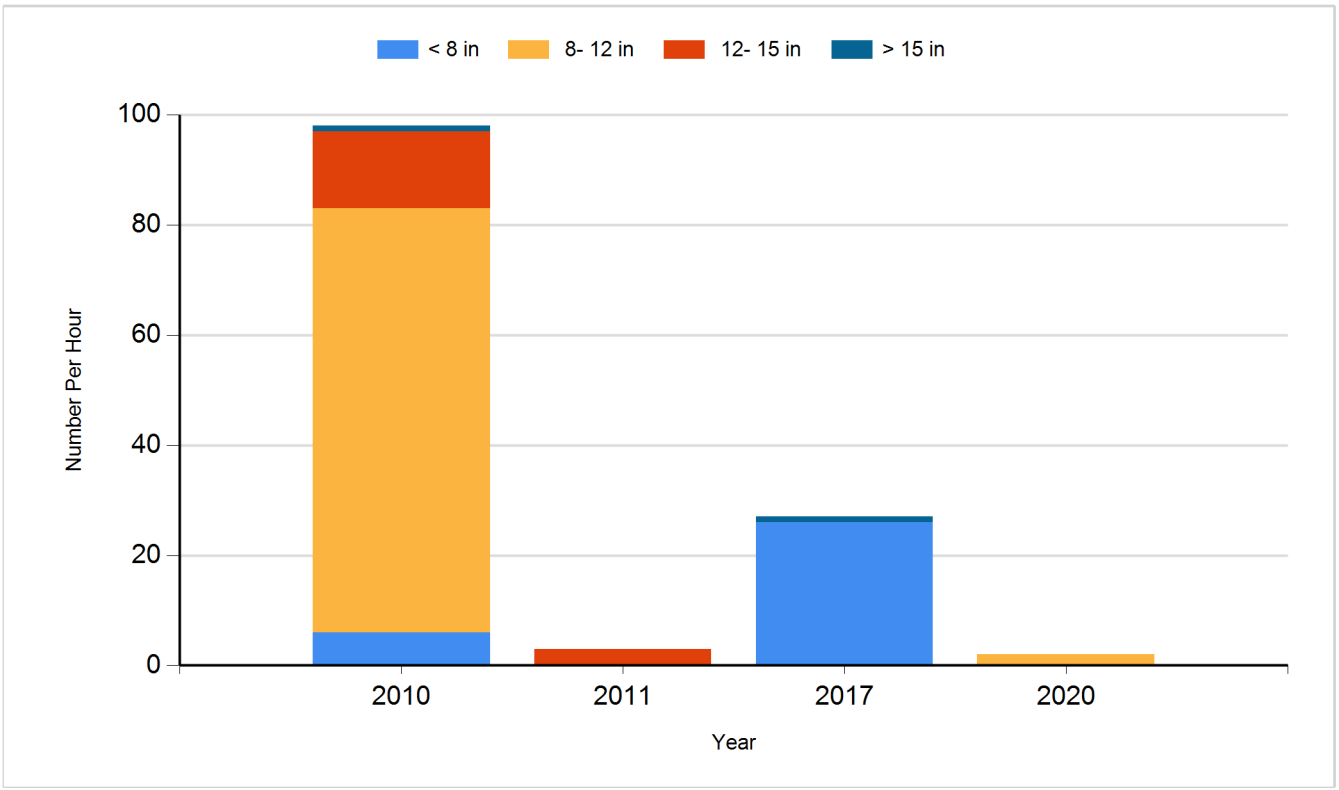
Species: Black Crappie
Gear: AFS std frame net



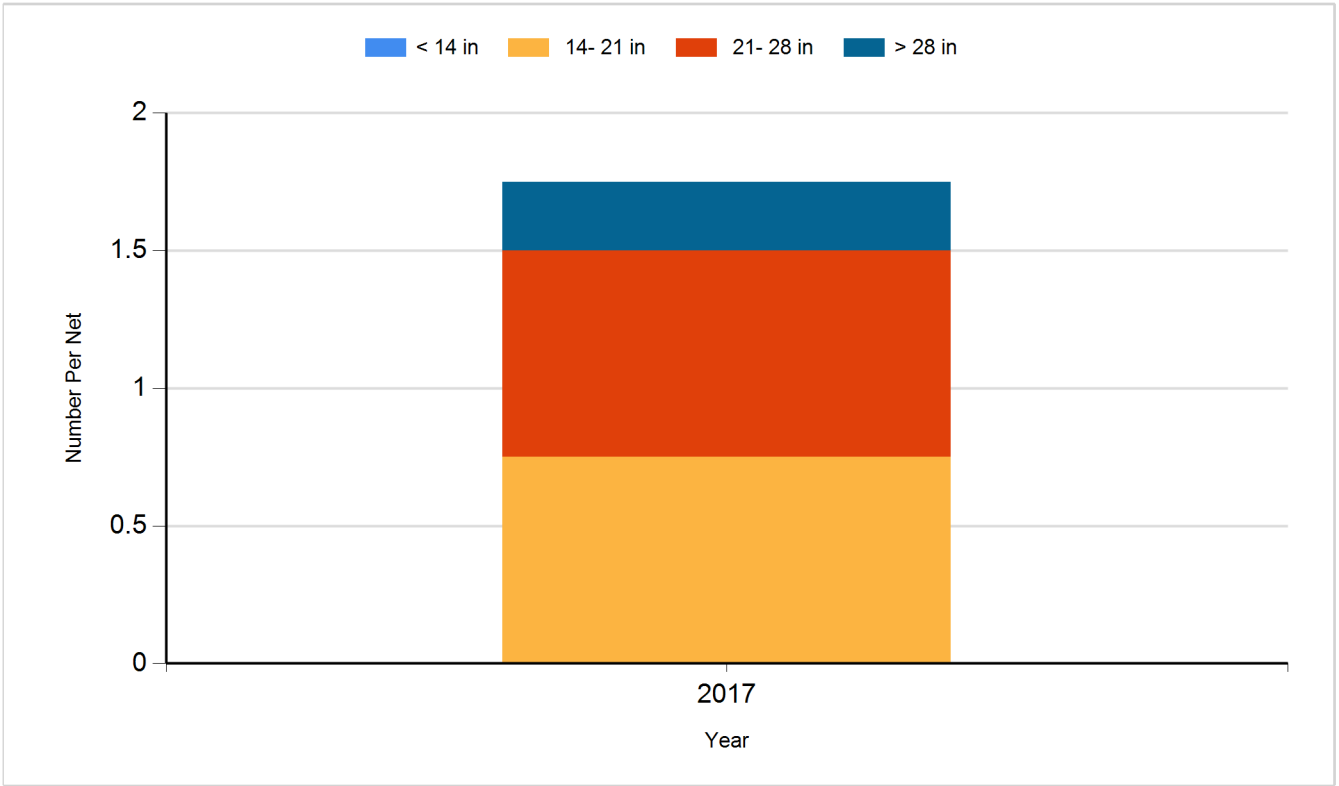
Species: Black Crappie
Gear: frame net (std 3/4 in)



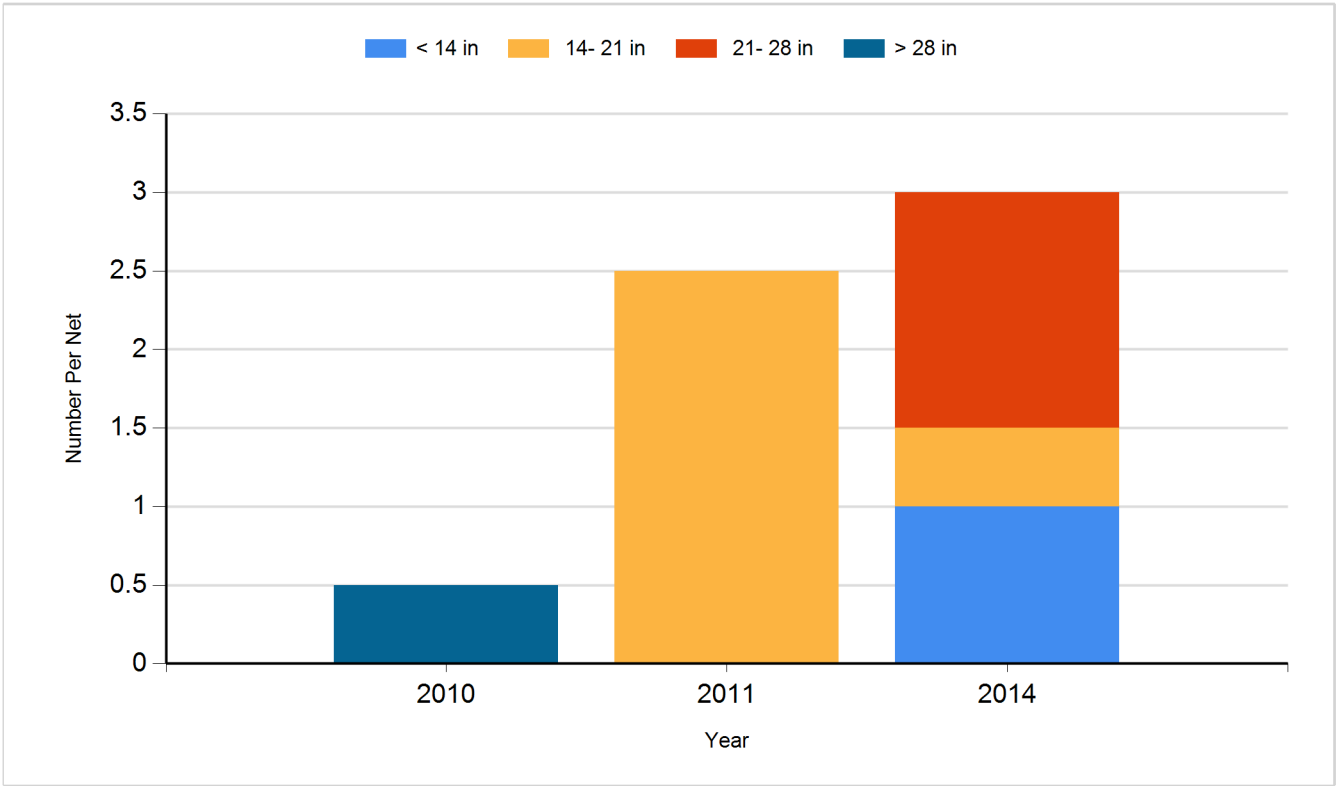
Species: Largemouth Bass
Gear: boat shocker (night)



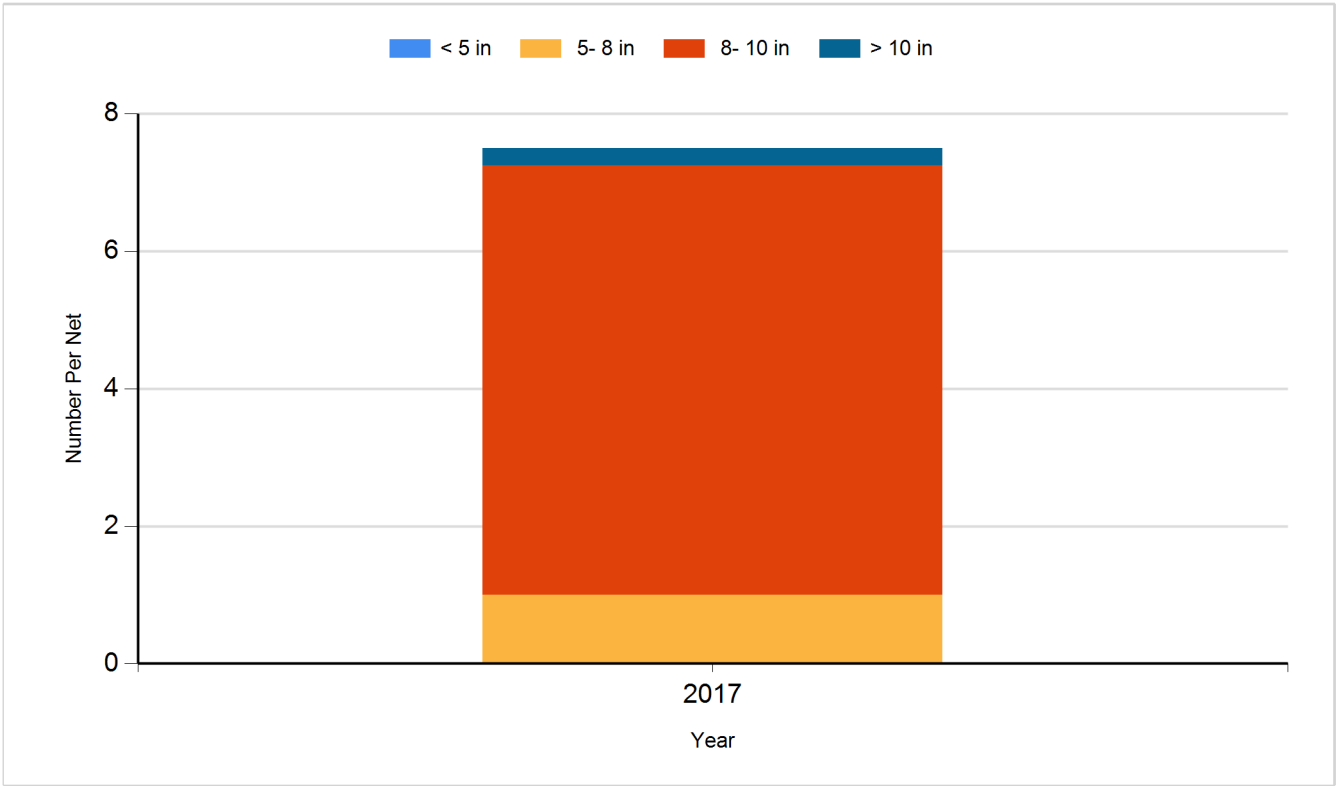
Species: Northern Pike
Gear: AFS std gill net



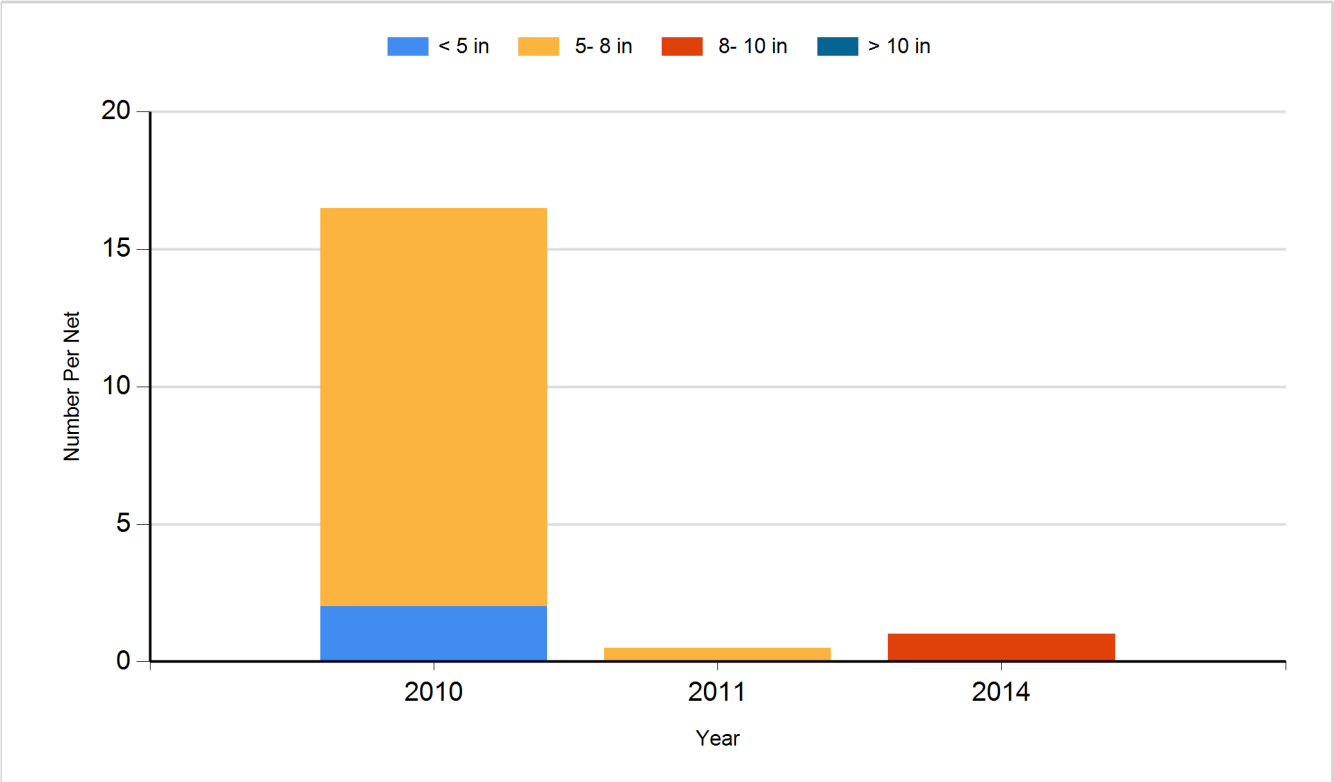
Species: Northern Pike
Gear: std exp gill net



Species: Yellow Perch
Gear: AFS std gill net



Species: Yellow Perch
Gear: std exp gill net



Fish Stocking

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

Year	Species	Size	Number
2009	Black Crappie	Adult	21
2009	Largemouth Bass	Adult	161
2009	Largemouth Bass	Fingerling	4,140
2009	Northern Pike	Adult	14
2009	Yellow Perch	Juvenile	105
2012	Yellow Perch	Adult	300
2013	Channel Catfish	Large Fingerling	720
2014	Channel Catfish	Juvenile	100
2016	Largemouth Bass	Adult	68
2017	Largemouth Bass	Adult	103
2018	Channel Catfish	Adult	110
2019	Channel Catfish	Adult	107
2019	Largemouth Bass	Adult	20
2019	Largemouth Bass	Juvenile	30
2020	Bluegill	Adult	90