Lake Farley Survey Summary

Lake Farley, located within the Milbank city limits, is managed as a community-based fishery. A variety of fish species are present in the lake but black bullheads tend to be the most abundant. Stockings of adult fish (generally northern pike or white bass) have been used to create additional angling opportunities.

- **Black crappie and bluegill.** Black crappie and bluegill were among the most abundant fish species in the 2018 frame net catch. Relative abundance was considered low to moderate with mean frame net CPUE's of 7.0 and 8.4 for black crappie and bluegill, respectively. Sampled black crappie ranged in length from 4.3 to 11.0 inches with most being 6.3 to 7.9 inches; while the majority of bluegill were 5.5 to 6.3 inches.

- **Northern pike.** Relative abundance of northern pike was considered moderate to high at 1.5/gill net. Sampled northern pike ranged in length from 20.4 to 26.8 inches.

- **White bass.** White bass, likely from the spring stocking of 150 adults, were captured in gill nets (0.5/net) and frame nets (2.5/net). In total, 27 white bass ranging in length from 9.1 to 15.4 inches were sampled. Stocked white bass should provide angling opportunities at Lake Farley.

- **Yellow perch.** Few yellow perch were sampled (1.3/gill net); all were less than 8.0 inches.

For more detailed results see the computer generated South Dakota Statewide Fisheries Survey for Lake Farley (below).

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Farley, Grant County
UMN-Lake-517-000
2018

Lake Information

Name: Farley

County: Grant

Surface Area: 77 Acres

Maximum Depth: 7 Feet

Mean Depth: 4 Feet

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jun 26, 2018	4 net-nights
frame net (std 3/4 in)	Jun 26, 2018	10 net-nights

Common Fish Species Present

Northern Pike

Black Crappie

Black Bullhead

Common Carp

Bluegill

White Bass

White Sucker

Yellow Bullhead

Yellow Perch

Largemouth Bass

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)
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
Bluegill	3	8	6	15	8	20	10	25	12	30
Channel Catfish	11	28	16	41	24	61	28	71	36	91
Common Carp	11	28	16	41	21	53	26	66	33	84
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
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
Rock Bass	4	10	7	18	9	23	11	28	13	33
Rudd	6	15	10	25	12	30	15	38	19	48
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
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 Sucker	6	15	10	25	13	33	16	41	20	51
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	CPUE	CI-80	PSD	CI-80	PSD-P	CI-80	Wr	CI-80
AFS std gill net	Black Bullhead	18.5	6.5	0		0		80	1
	Black Crappie	2.0	1.5	0		0		104	2
	Common Carp	16.3	5.9	52	9	0		86	1
	Northern Pike	1.5	0.5	83		0		89	5
	White Bass	0.5	0.5	100		100		97	1
	White Sucker	2.3	1.4	100		33		83	2
	Yellow Bullhead	0.3	0.4	100		100		95	
	Yellow Perch	1.3	1.2	0		0		90	2
frame net (std 3/4 in)	Black Bullhead	103.4	35.5	0		0		75	1
	Black Crappie	7.0	3.8	14	6	4		92	1
	Bluegill	8.4	3.1	61	8	0		99	1
	Common Carp	1.3	1.0	54	23	8		82	2
	Largemouth Bass	0.2	0.3	50		0		109	1
	Northern Pike	0.5	0.2	80		40		82	5
	Orangespotted Sunfish*	0.1	0.1						
	White Bass	2.5	1.7	100		52	16	82	2
	White Sucker	1.3	0.9	100		54	23	81	6
	Yellow Bullhead	1.5	1.8	33		7		83	2
	Yellow Perch	0.8	0.5	13		0		74	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.

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

		CPUE										
Gear	Species	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Avg
AFS std gill net	Black Bullhead										18.5	18.5
	Black Crappie										2.0	2.0
	Common Carp										16.3	16.3
	Northern Pike										1.5	1.5
	White Bass										0.5	0.5
	White Sucker										2.3	2.3
	Yellow Bullhead										0.3	0.3
	Yellow Perch										1.3	1.3
frame net (std 3/4 in)	Black Bullhead					331.9					103.4	217.7
	Black Crappie					0.0					7.0	3.5
	Bluegill					0.0					8.4	4.2
	Common Carp					0.0					1.3	0.7
	Largemouth Bass					0.0					0.2	0.1
	Northern Pike					0.1					0.5	0.3
	Orangespotted Sunfish*					0.0					0.1	0.1
	White Bass					0.0					2.5	1.3
	White Sucker					0.3					1.3	0.8
	Yellow Bullhead					0.0					1.5	0.8
	Yellow Perch					13.3					0.8	7.1
std exp gill net	Black Bullhead					45.0						45.0
	Common Shiner					11.0						11.0
	White Sucker					0.5						0.5
	Yellow Perch					4.0						4.0

Fish Condition

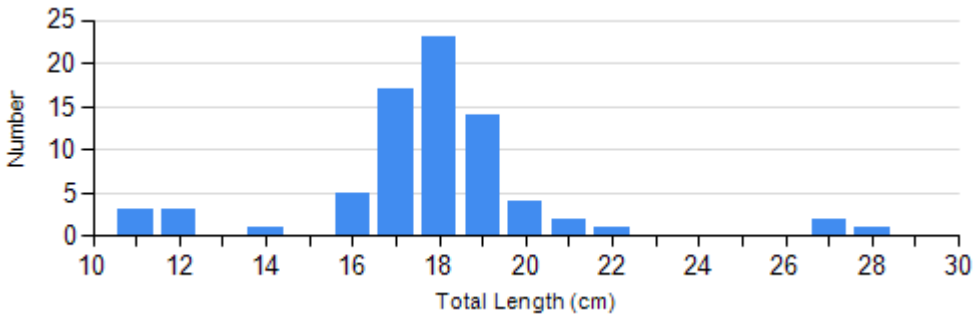
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2018	60	93 (0.6)	7	84 (3.6)	3	83 (0.4)	0	
Bluegill Frame Net	2018	33	103 (2.1)	51	96 (0.8)	0		0	
Northern Pike Gill Net	2018	1	93	5	88 (4.4)	0		0	
Yellow Perch Gill Net	2018	5	90 (1.6)	0		0		0	

Length Frequency Distribution

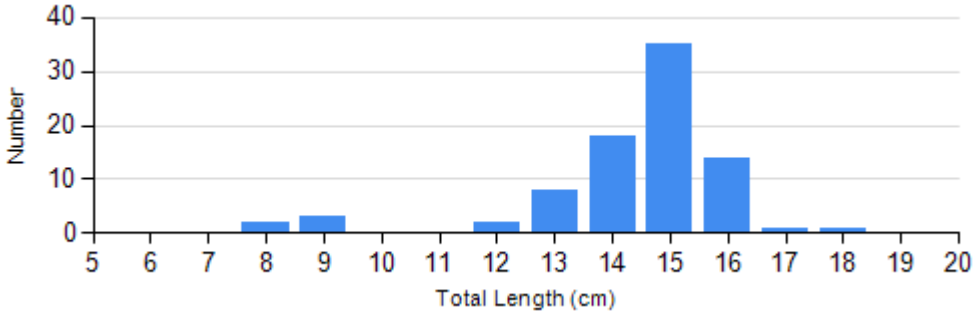
Length frequency histogram of species sampled by year.

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



2018

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

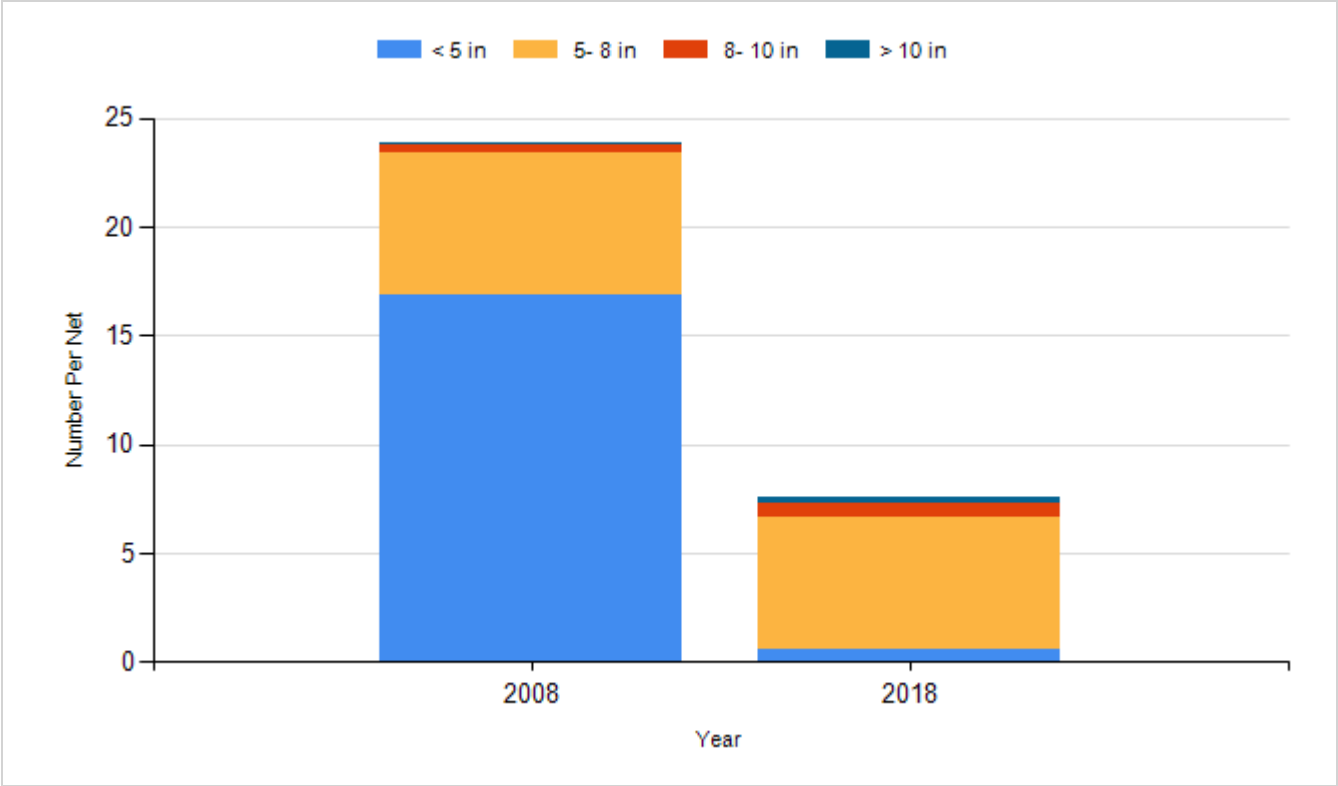


2018

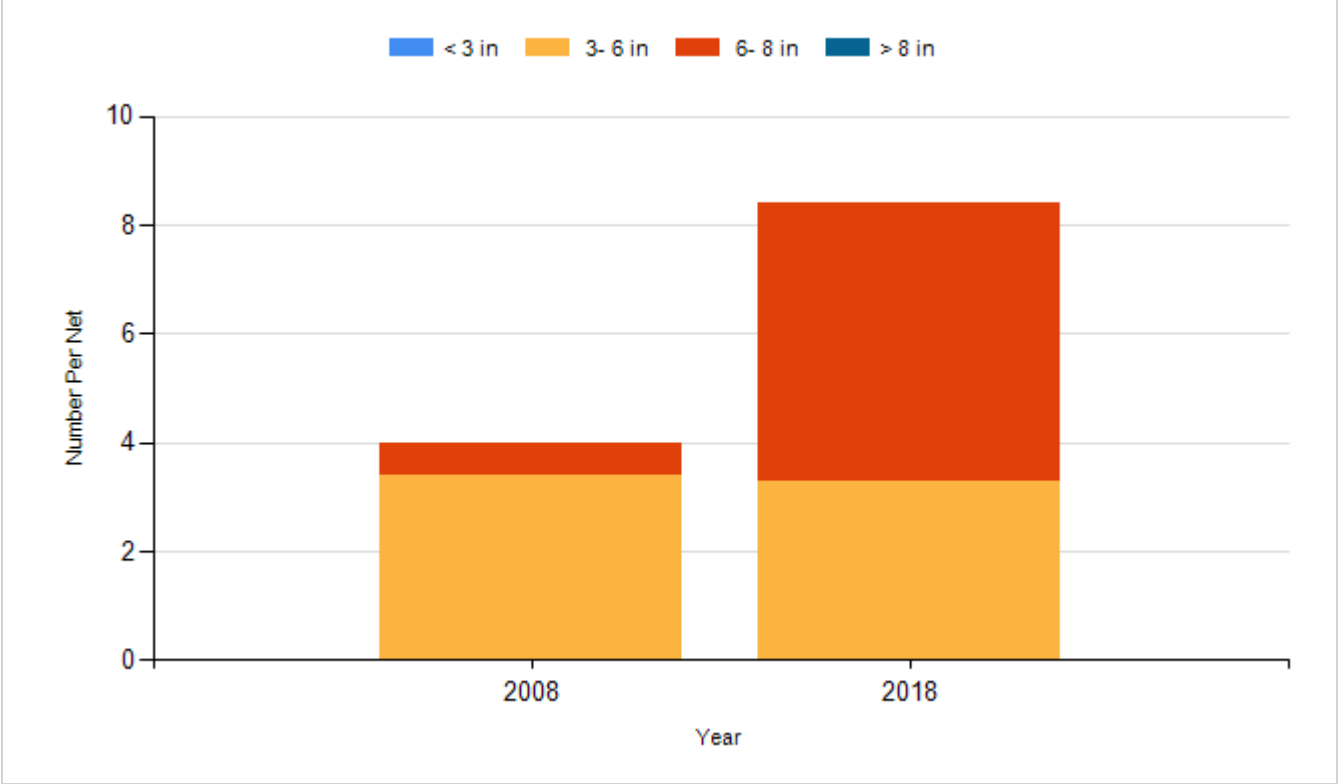
Historic Fish Sizes and Relative Abundance

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

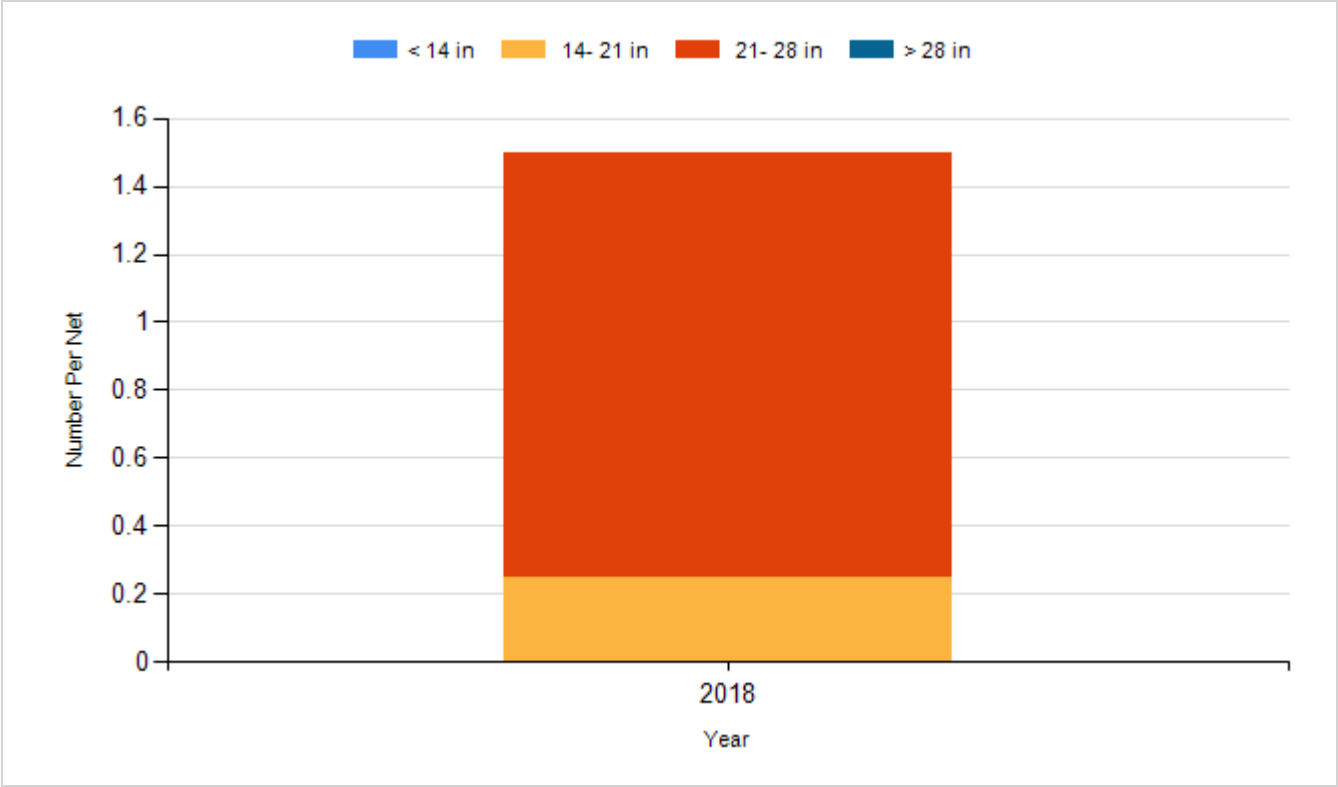
Species: Black Crappie
Gear: frame net (std 3/4 in)



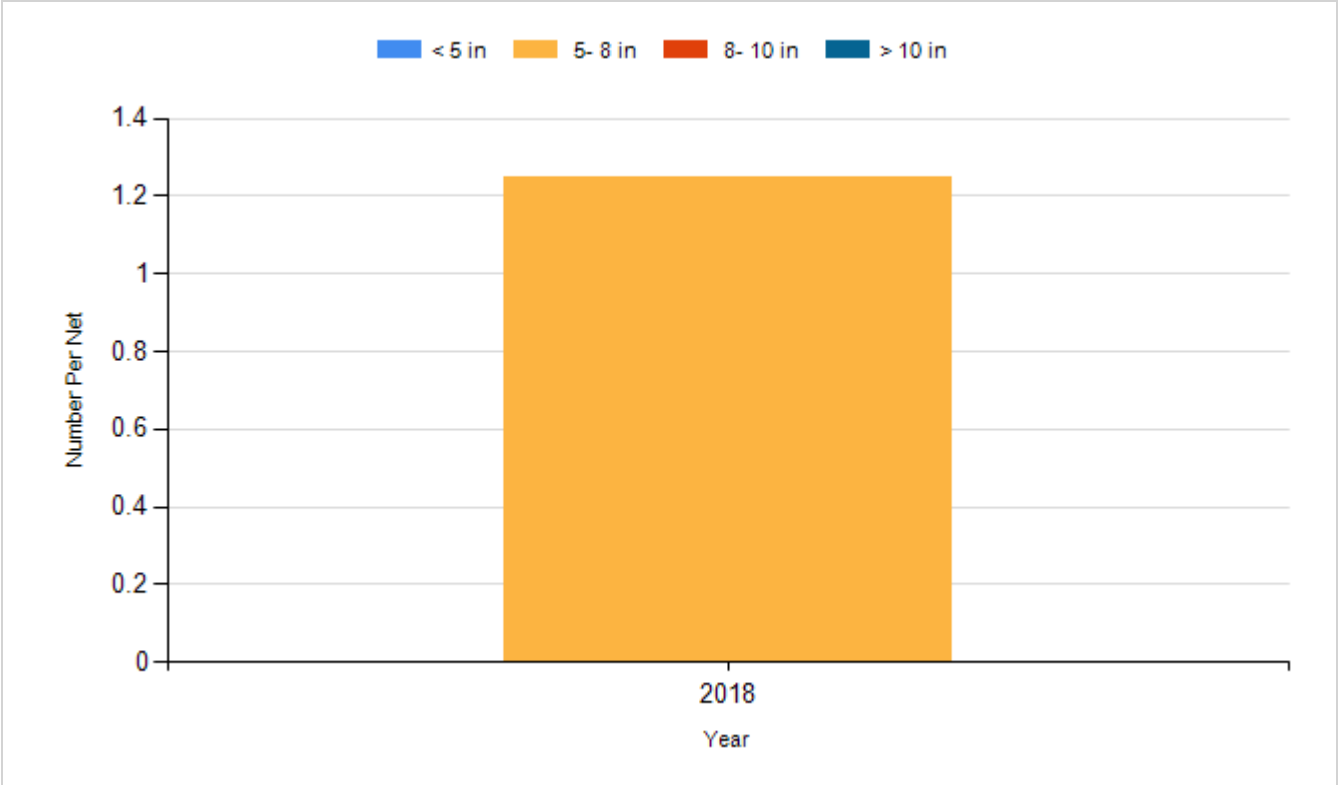
Species: Bluegill
Gear: frame net (std 3/4 in)



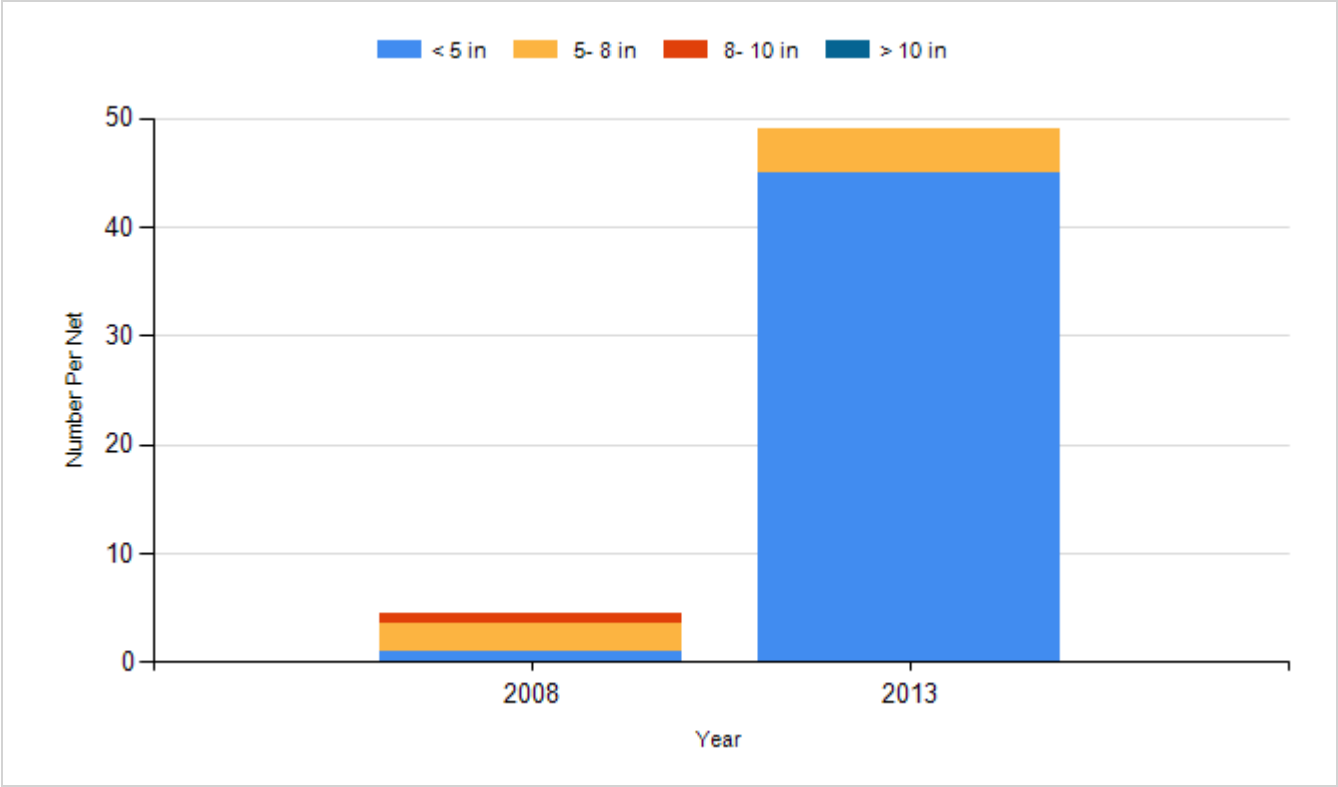
Species: Northern Pike
Gear: AFS std gill net



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
2007	Northern Pike	Adult	180
2014	Northern Pike	Adult	500
2015	Northern Pike	Adult	325
2015	White Bass	Adult	320
2016	Northern Pike	Adult	500
2016	Yellow Perch	Juvenile	6,000
2017	Northern Pike	Adult	115
2018	White Bass	Adult	150