

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Gustafsons Urban Fishing Pond, Brookings County
MBS-Lake-339-000
2021

Lake Information

Name: Gustafsons Urban Fishing Pond
County: Brookings
Surface Area: 10 Acres

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jun 17, 2021	2 net-nights
frame net (std 3/4 in)	Jun 17, 2021	3 net-nights

Common Fish Species Present

Northern Pike

White Bass

Yellow Bullhead

White Sucker

Walleye

Bluegill

Bigmouth Buffalo

Black Bullhead

Black 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).

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.
- **std 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.

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

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.

$$PSD = \left(\frac{\text{number of fish} \geq \text{quality length}}{\text{number of fish} \geq \text{stock length}} \right) \times 100$$

$$PSD - P = \left(\frac{\text{number of fish} \geq \text{preferred length}}{\text{number of fish} \geq \text{stock length}} \right) \times 100$$

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.

$$Wr = \left(\frac{W}{W_s} \right) \times 100$$

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).

Species Name	Stock		Quality		Preferred		Memorable		Trophy	
	(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**

Gear	Species	Sample Size (n)	Abundance		Stock Density Indices			Condition	
			CPUE	CI-80	PSD	CI-80	PSD-P	CI-80	Wr
AFS std gill net	Black Bullhead	1	0.5	1.5	100		0		
	Northern Pike	8	4.0	3.1	100		13	83	5
	Walleye	2	1.0	0.0	100		100	76	7
	White Sucker	5	2.5	1.5	100		100		
frame net (std 3/4 in)	Bigmouth Buffalo	2	0.7	0.6	100		100		
	Black Bullhead	1	0.3	0.6	100		0		
	Black Crappie	1	0.3	0.6	100		0	104	
	Bluegill	2	0.7	1.3	100		50	105	9
	Northern Pike	29	9.7	5.6	76	13	0	83	2
	Yellow Bullhead	41	13.7	9.1	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.

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

Gear	Species	CPUE										Avg
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
AFS std gill net	Black Bullhead										0.5	0.50
	Northern Pike										4.0	4.00
	Walleye										1.0	1.00
	White Sucker										2.5	2.50
frame net (std 3/4 in)	Bigmouth Buffalo	0.0									0.7	0.35
	Black Bullhead	0.0									0.3	0.15
	Black Crappie	19.0									0.3	9.65
	Bluegill	18.3									0.7	9.50
	Northern Pike	1.8									9.7	5.75
	Walleye	0.3									0.0	0.15
	White Bass	0.3									0.0	0.15
	Yellow Bullhead	0.0									13.7	6.85
Yellow Perch	1.5									0.0	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.

Gear	Species	Index	Year											
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		
AFS std gill net	Black Bullhead	PSD											100	
		PSD-P											0	
	Northern Pike	PSD											100	
		PSD-P											13	
		Wr											83	
	Walleye	PSD											100	
		PSD-P											100	
		Wr											76	
	White Sucker	PSD											100	
		PSD-P											100	
	frame net (std 3/4 in)	Bigmouth Buffalo	PSD											100
			PSD-P											100
Black Bullhead		PSD											100	
		PSD-P											0	
		Wr											0	
Black Crappie		PSD	16										100	
		PSD-P	11										0	
		Wr	78										104	
Bluegill		PSD	23										100	
		PSD-P	1										50	
		Wr	90										105	
Northern Pike		PSD	43										76	
		PSD-P	14										0	
		Wr	72										83	
Walleye		PSD	100											
		PSD-P	100											
		Wr	76											
White Bass		PSD	100											
		PSD-P	100											
		Wr	75											
Yellow Bullhead		PSD											100	
		PSD-P											100	

Fish Condition

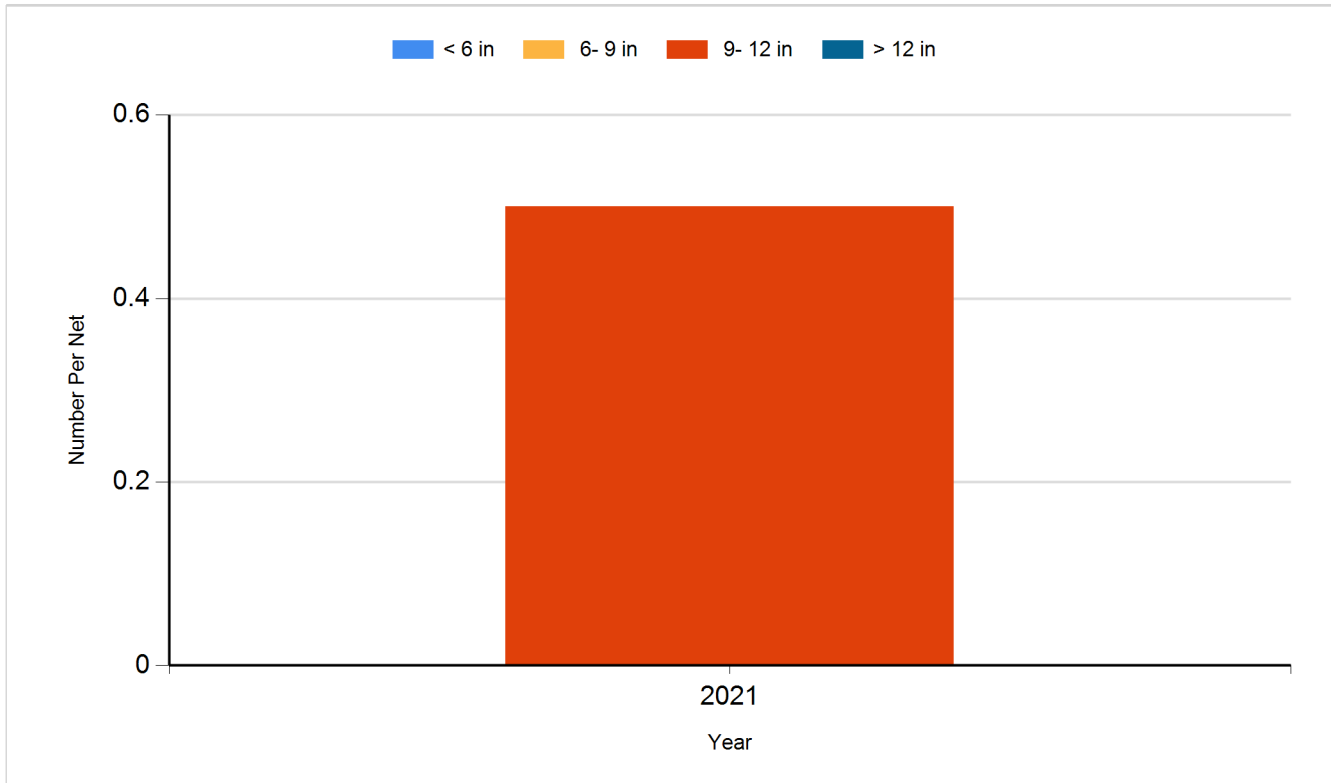
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Black Crappie Frame Net	2021	0		1	104	0		0	
Bluegill Frame Net	2021	0		1	98	1	113	0	
Northern Pike Gill Net	2021	0		7	84 (4.9)	1	79	0	
Walleye Gill Net	2021	0		0		1	71	1	81

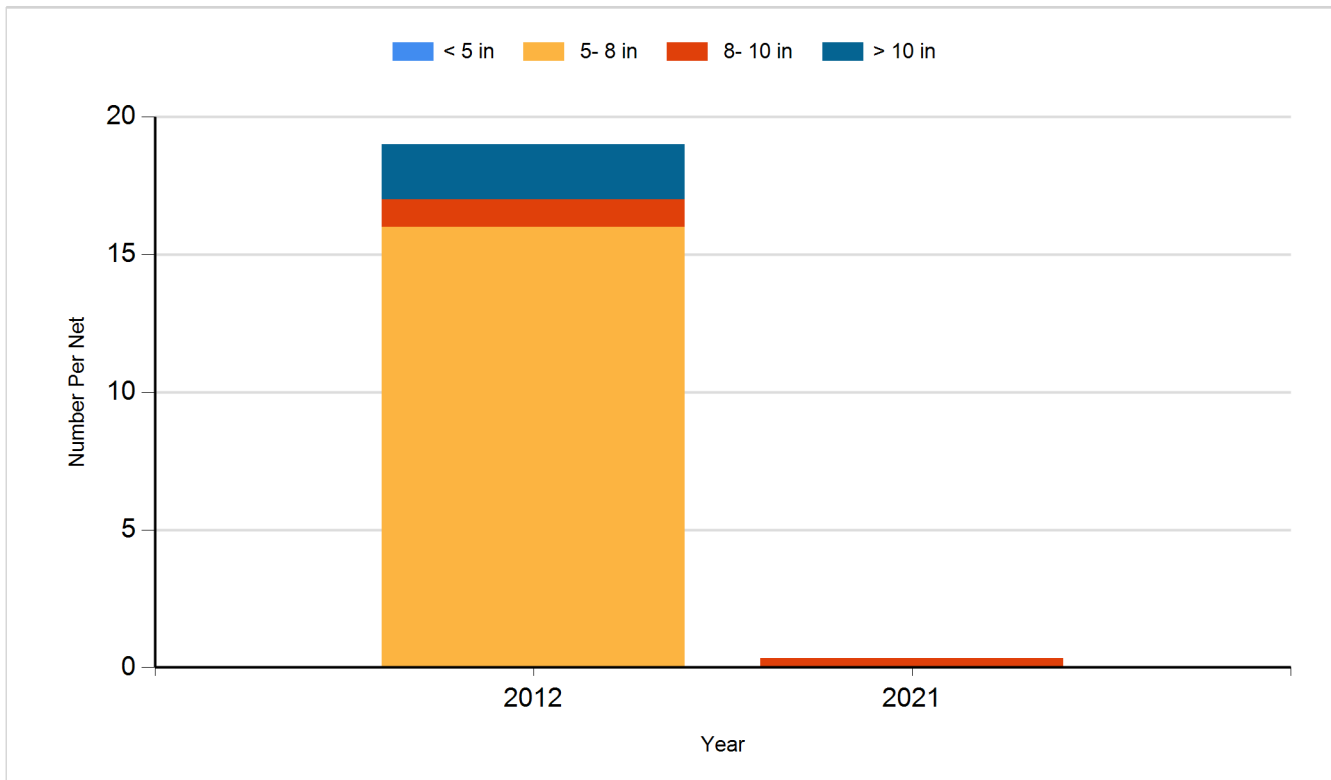
Historic Fish Sizes and Relative Abundance

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

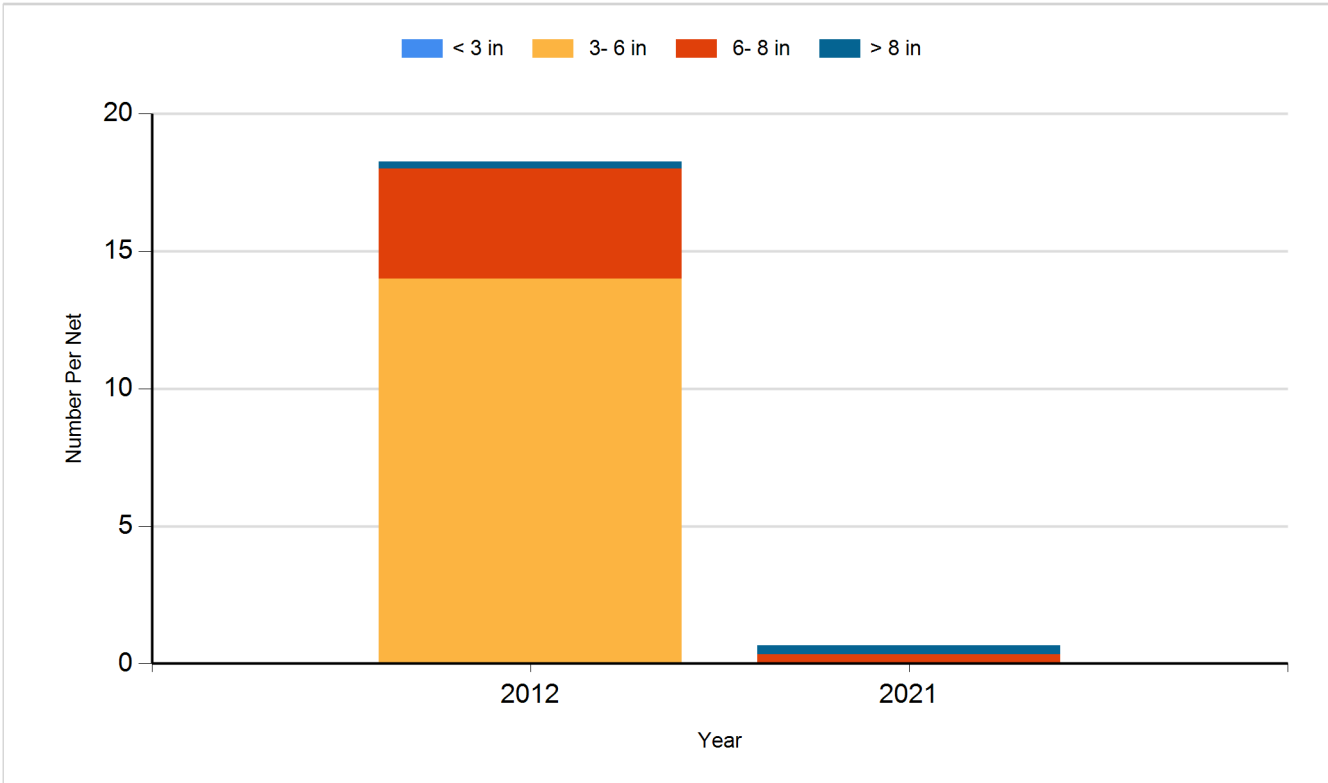
Species: Black Bullhead
Gear: AFS std gill net



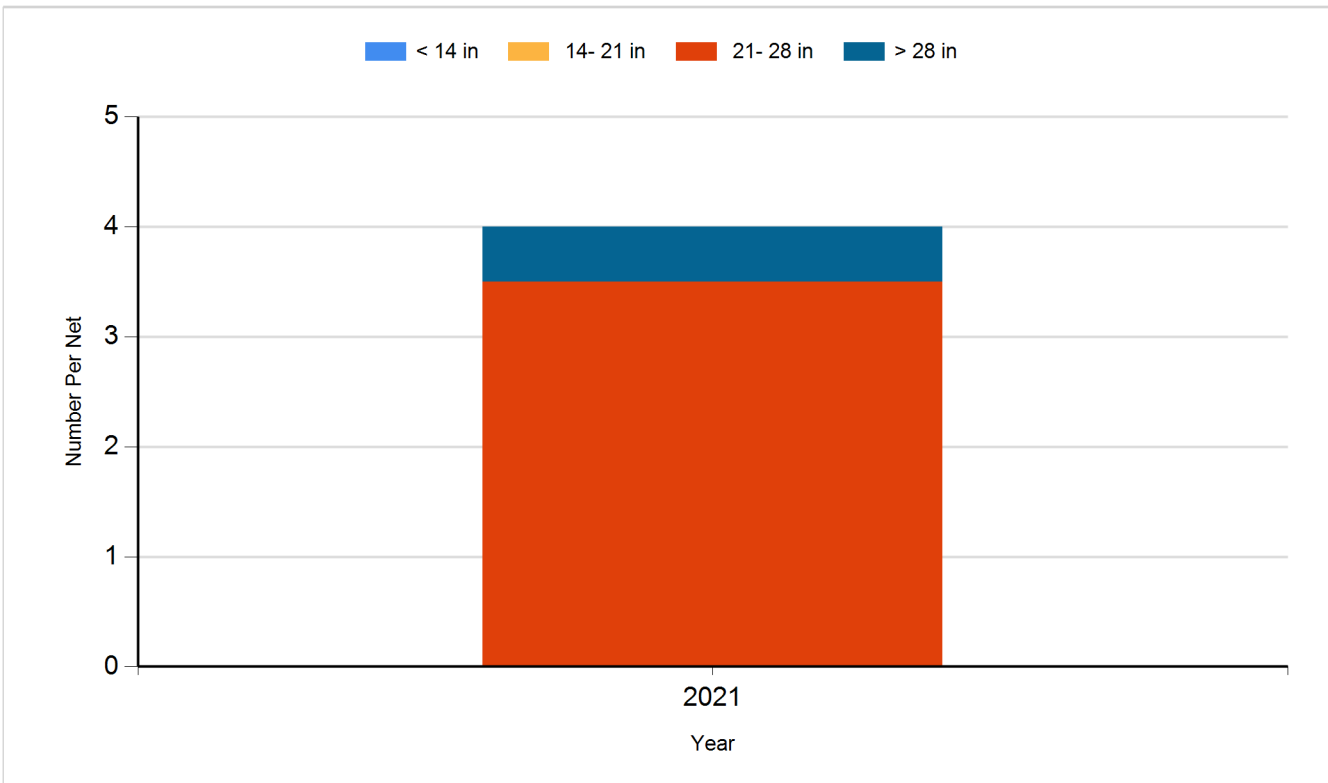
Species: Black Crappie
Gear: frame net (std 3/4 in)



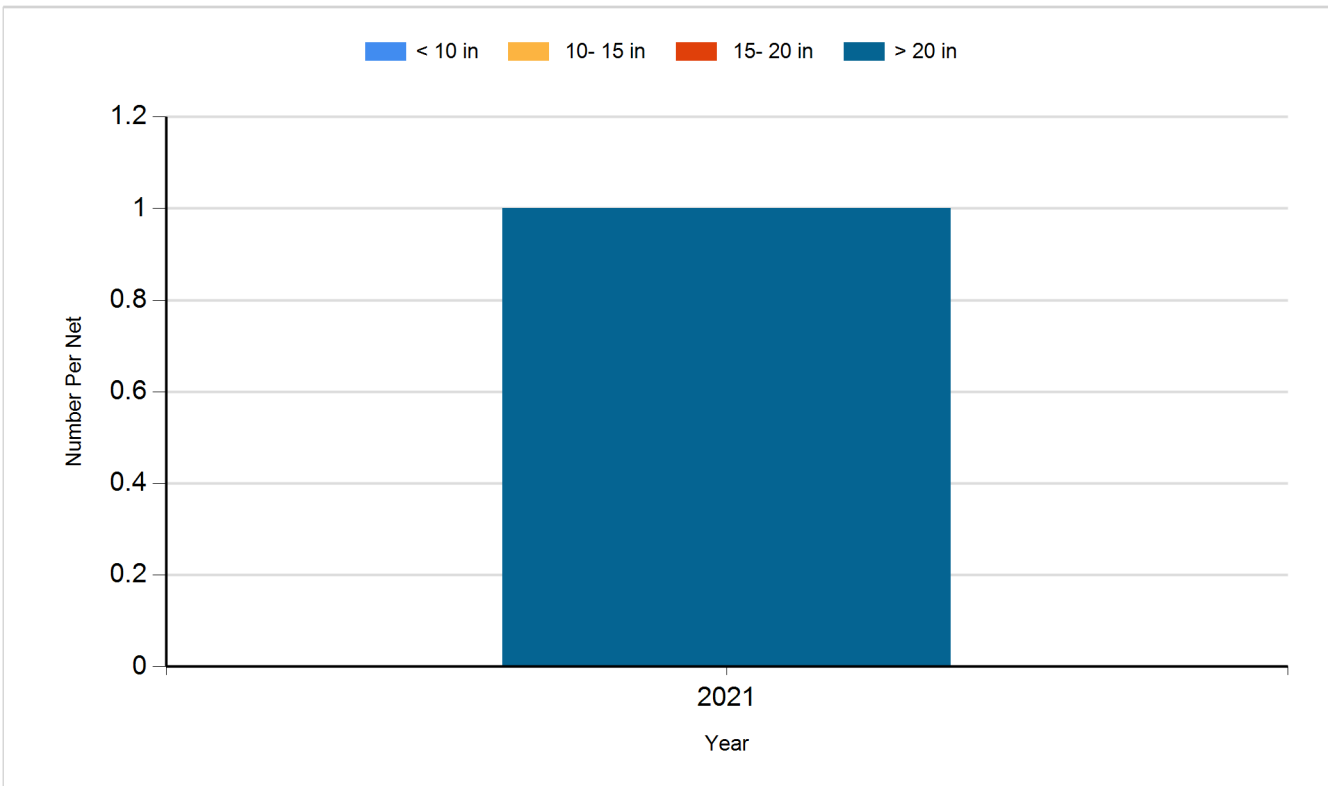
Species: Bluegill
Gear: frame net (std 3/4 in)



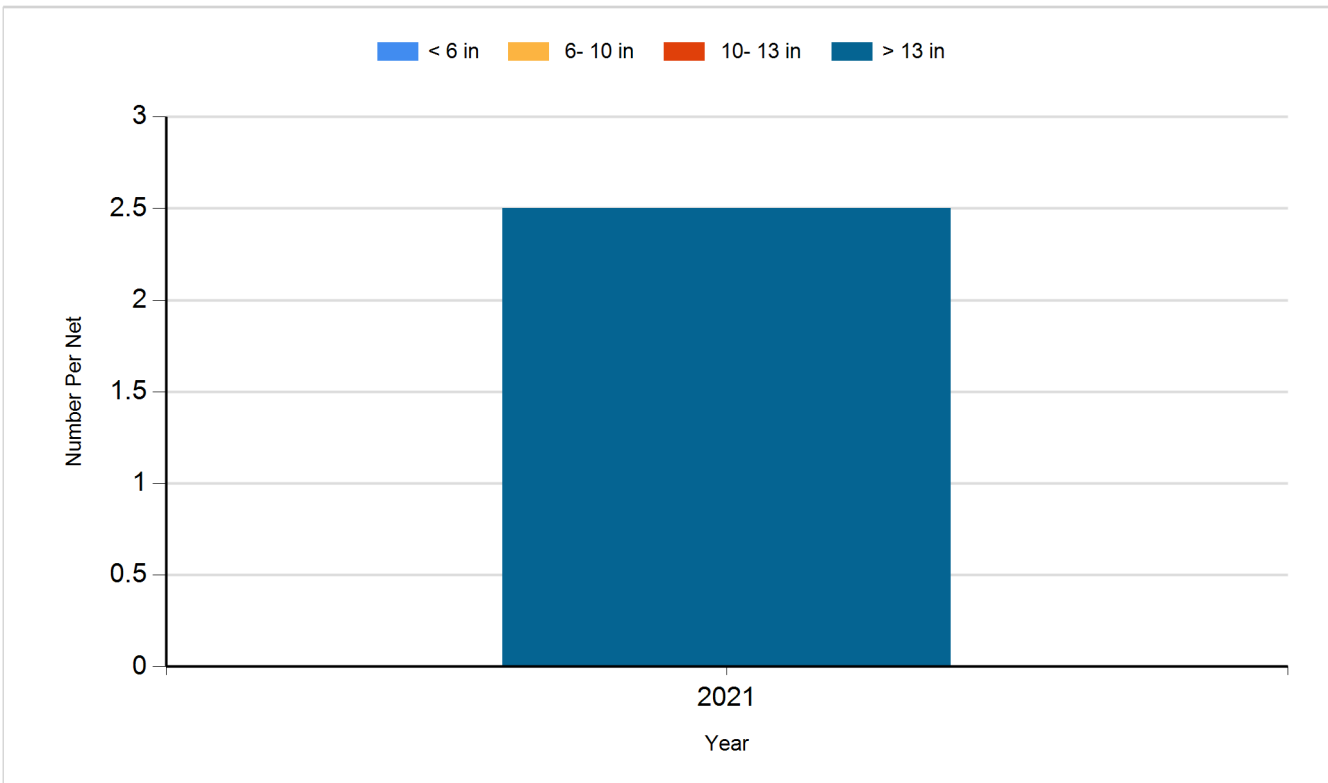
Species: Northern Pike
Gear: AFS std gill net



Species: Walleye
Gear: AFS std gill net



Species: White Sucker
Gear: AFS std gill net



Fish Stocking

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

Year	Species	Size	Number
2010	Northern Pike	Adult	25
2010	White Bass	Adult	290
2012	Northern Pike	Adult	250
2013	Northern Pike	Adult	250
2014	Northern Pike	Adult	256
2021	Northern Pike	Adult	110