

# SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

Lakota, Custer County

MCS-Lake-2-000

2021

## Lake Information

**Name:** Lakota  
**County:** Custer  
**Surface Area:** 10 Acres

## Surveys and Investigations

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

Gear	Date	Effort
AFS std frame net	Jul 07, 2021	1 net-nights
AFS std gill net	Jul 07, 2021	1 net-nights
frame net (std 3/4 in)	Jul 07, 2021	2 net-nights

## **Common Fish Species Present**

Yellow Perch

Rainbow Trout

Northern Pike

Bluegill

Black Crappie

Brown Trout

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## 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	Brown Trout	1	0.0		0		0		
	Northern Pike	1	1.0		100		0	107	
	Rainbow Trout	2	2.0		0		0	88	2
frame net (std 3/4 in)	Black Crappie	8	3.5	7.7	57		0	87	3
	Bluegill	8	4.0	12.3	0		0	102	3
	Yellow Perch	25	12.5	38.5	100		32	15	96

## 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	Brown Trout										0.0	0.00
	Northern Pike										1.0	1.00
	Rainbow Trout										2.0	2.00
frame net (std 3/4 in)	Black Crappie					1.0					3.5	2.25
	Bluegill					0.0					4.0	2.00
	Northern Pike					1.0					0.0	0.50
	Yellow Perch					0.5					12.5	6.50

## 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	Brown Trout	PSD											0
		PSD-P											0
		Wr											107
	Northern Pike	PSD											100
		PSD-P											0
		Wr											107
	Rainbow Trout	PSD											0
		PSD-P											0
		Wr											88
frame net (std 3/4 in)	Black Crappie	PSD					100						57
		PSD-P					50						0
		Wr					106						87
	Bluegill	PSD											0
		PSD-P											0
		Wr											102
	Northern Pike	PSD					50						
		PSD-P					0						
		Wr					113						
	Yellow Perch	PSD					100						100
		PSD-P					0						32
		Wr					93						96

## **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	3	90 (5.5)	4	85 (2.6)	0		0	
Bluegill Frame Net	2021	8	102 (2.5)	0		0		0	
Brown Trout Gill Net	2021	0		0		0		0	
Northern Pike Gill Net	2021	0		1	107	0		0	
Rainbow Trout Gill Net	2021	2	88 (1.7)	0		0		0	

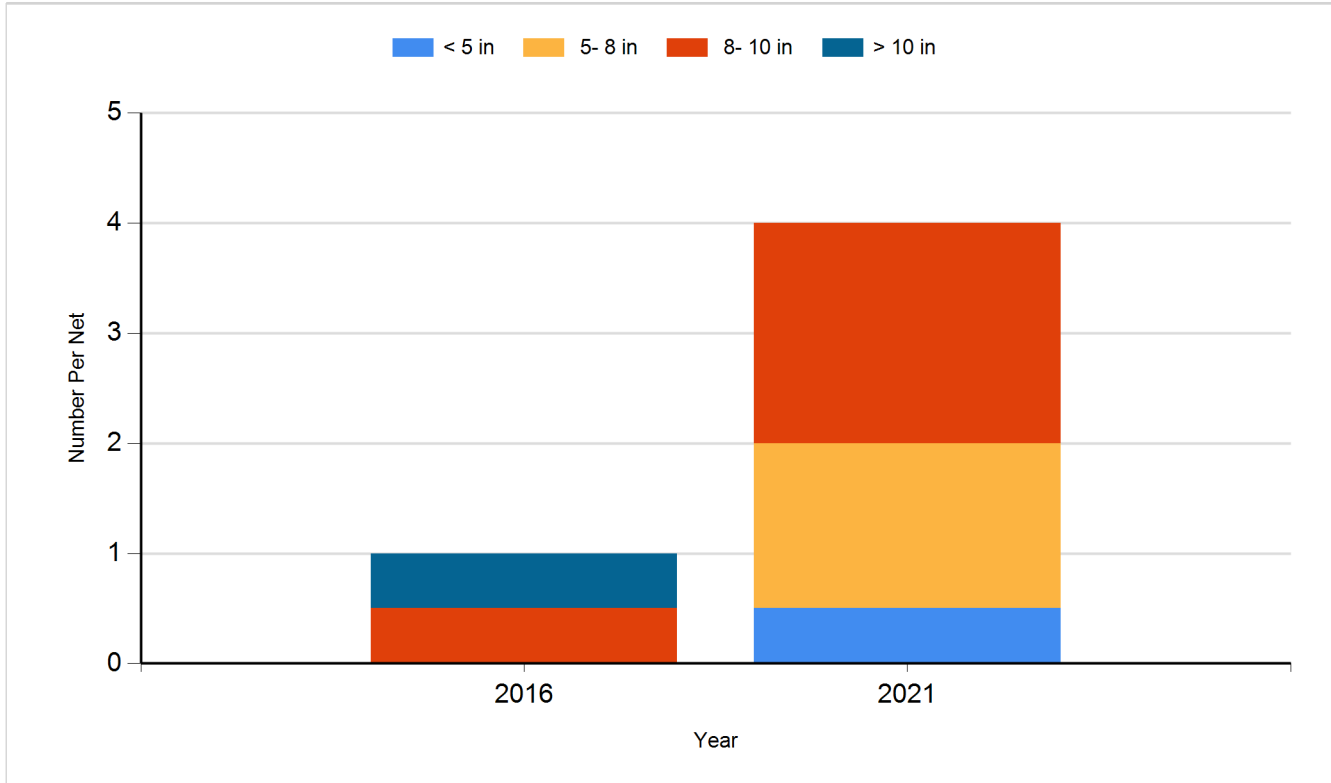




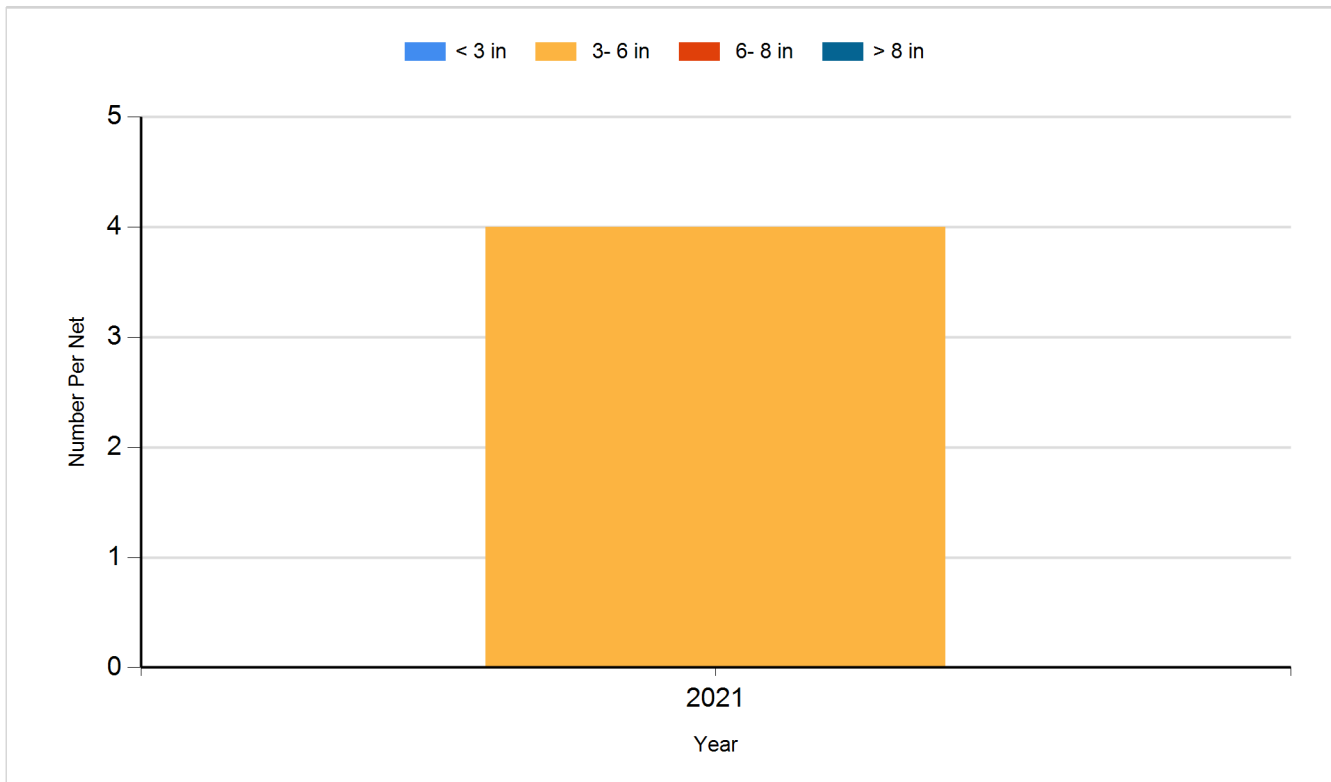
## Historic Fish Sizes and Relative Abundance

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

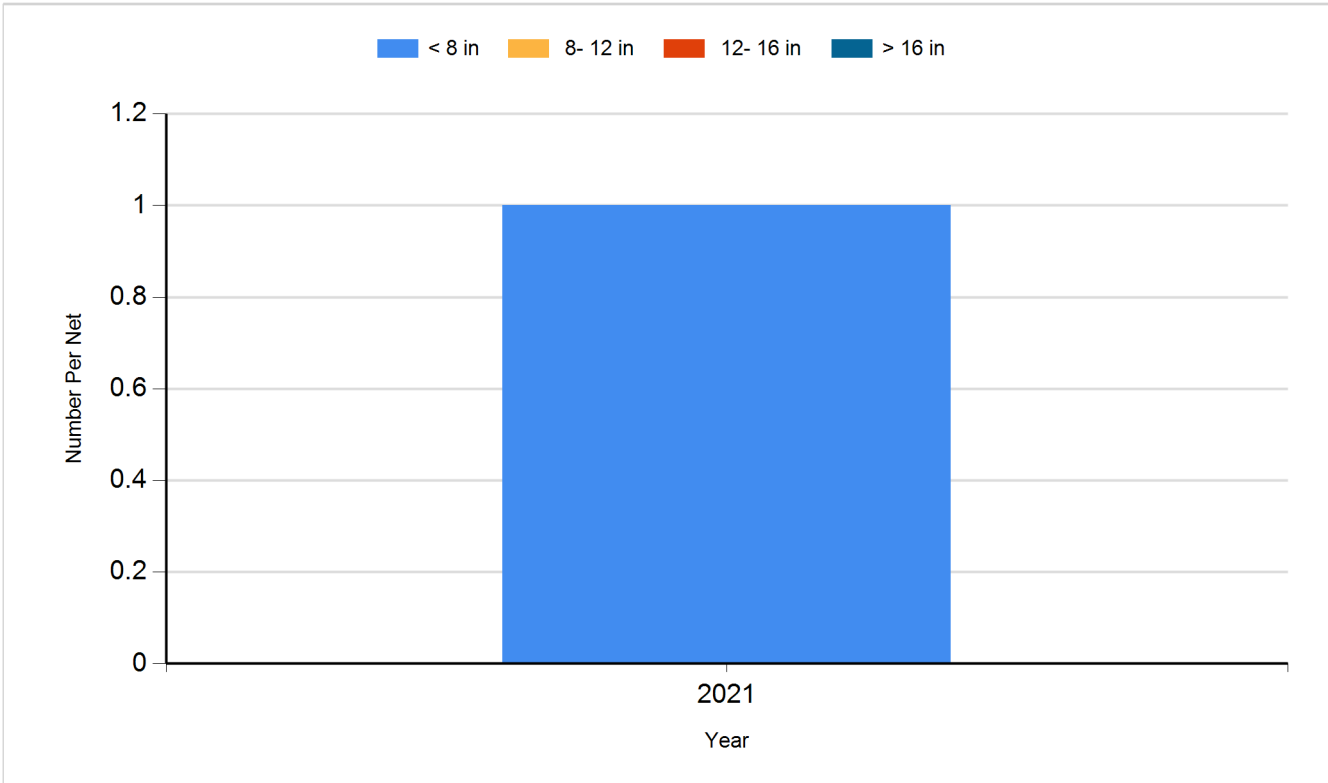
Species: Black Crappie  
Gear: frame net (std 3/4 in)



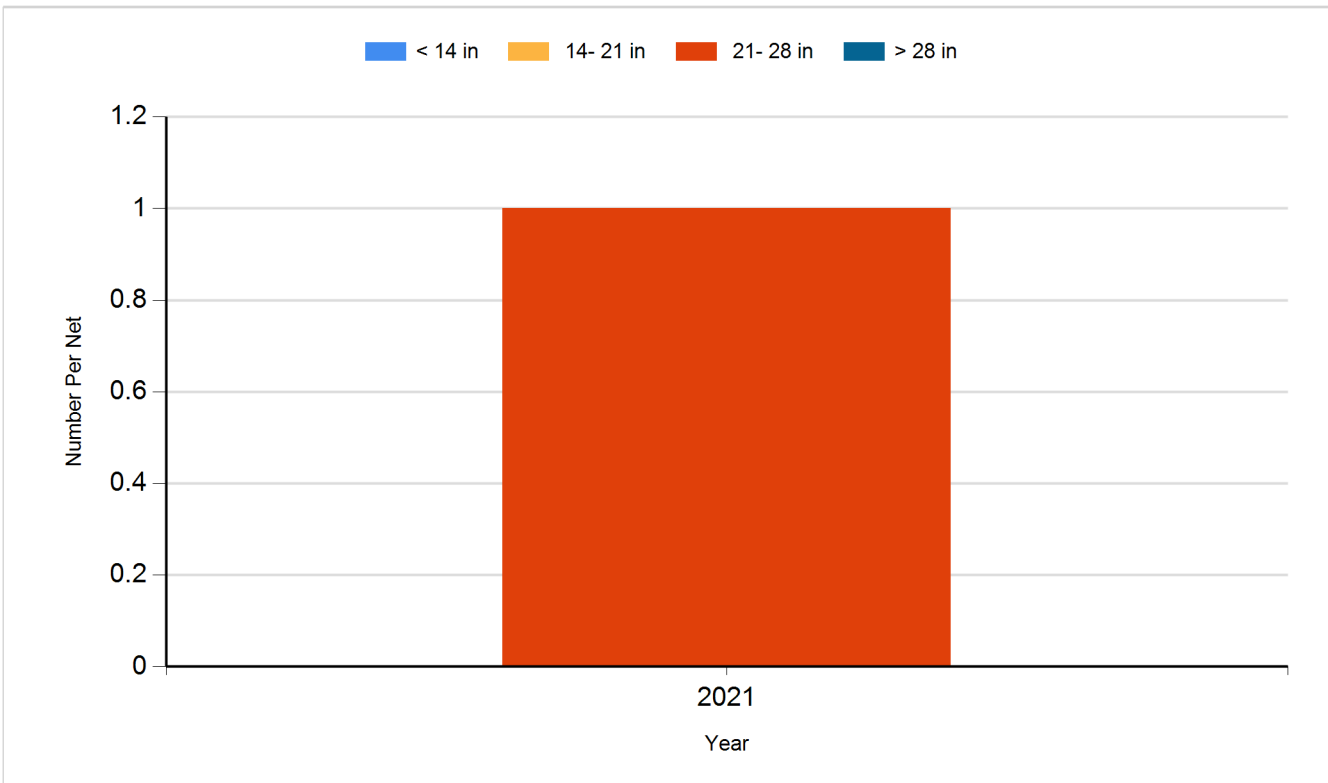
Species: Bluegill  
Gear: frame net (std 3/4 in)



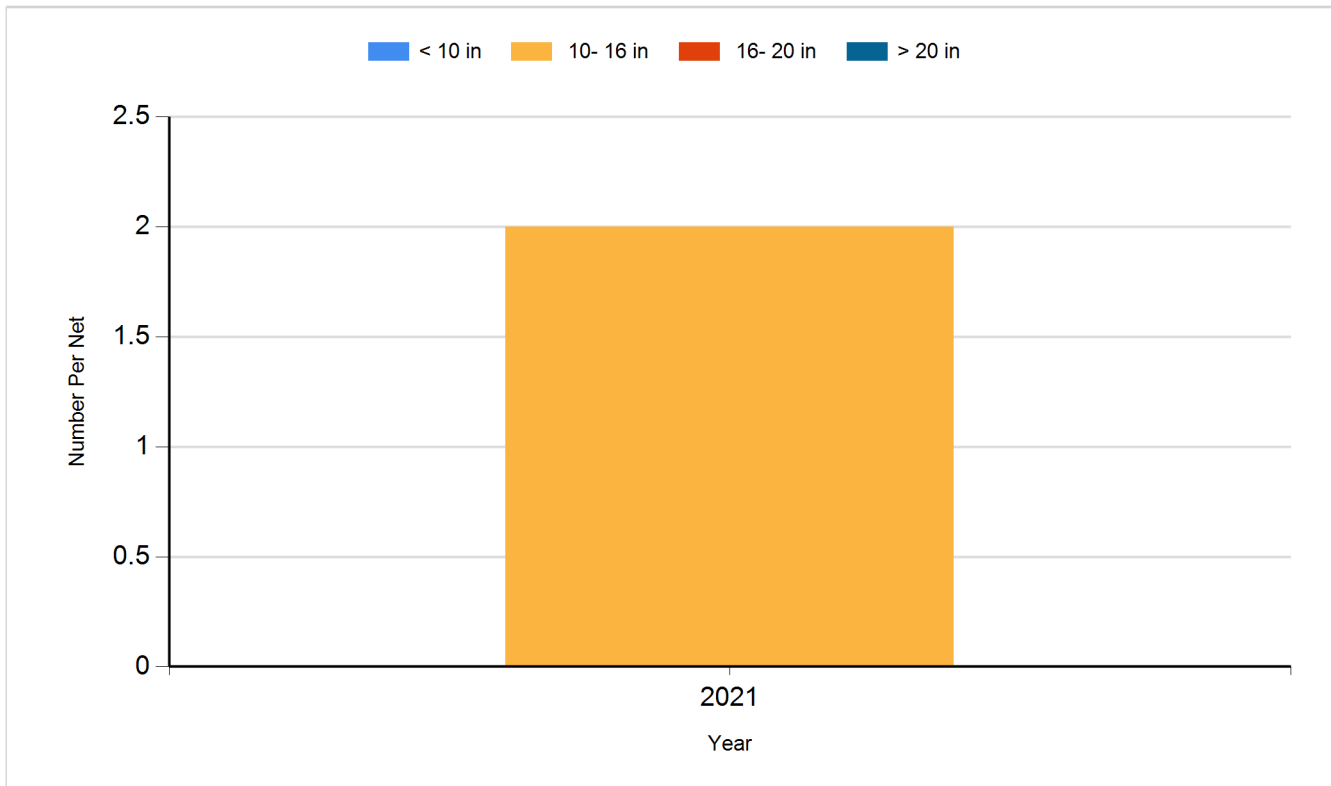
Species: Brown Trout  
Gear: AFS std gill net



Species: Northern Pike  
Gear: AFS std gill net



Species: Rainbow Trout  
Gear: AFS std gill net



## **Fish Stocking**

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

Year	Species	Size	Number
2010	Rainbow Trout (Erwin x Arlee)	Catchable	750
2010	Rainbow Trout (Shasta)	Catchable	1,050
2011	Rainbow Trout (Erwin x Arlee)	Catchable	440
2011	Rainbow Trout (Shasta)	Catchable	1,050
2012	Rainbow Trout (Erwin x Arlee)	Catchable	750
2012	Rainbow Trout (Shasta)	Catchable	1,050
2013	Rainbow Trout (Erwin x Arlee)	Catchable	500
2013	Rainbow Trout (Shasta)	Catchable	1,550
2014	Rainbow Trout (Shasta)	Catchable	1,050
2015	Black Crappie	Adult	50
2015	Rainbow Trout (Erwin x Arlee)	Catchable	500
2015	Rainbow Trout (Shasta)	Catchable	958
2016	Northern Pike	Adult	68
2016	Rainbow Trout (Erwin x Arlee)	Catchable	750
2016	Rainbow Trout (Shasta)	Catchable	1,050
2016	Redear Sunfish	Small Fingerling	5,000
2016	Yellow Perch	Adult	720
2017	Northern Pike	Adult	61
2017	Rainbow Trout (Erwin x Arlee)	Catchable	1,050
2017	Rainbow Trout (Shasta)	Catchable 15"	575
2017	Redear Sunfish	Fingerling	2,050
2018	Northern Pike	Adult	168
2018	Rainbow Trout (Shasta)	Catchable 15"	1,800
2018	Redear Sunfish	Fingerling	6,722
2019	Rainbow Trout (Erwin x Arlee)	Catchable 15"	1,488
2020	Rainbow Trout (Arlee)	Catchable 15"	1,750
2021	Rainbow Trout (Arlee)	Catchable 15"	1,050
2021	Rainbow Trout (Shasta)	Adult	750