

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

Ravine Park, Beadle County

MJA-Lake-540-000

2021

Lake Information

Name: Ravine Park **Maximum Depth:** 14 Feet
County: Beadle **Mean Depth:** 6 Feet
Legal Description: T111N-R61W-Sec 6, 30, 31
Surface Area: 108 Acres

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Sep 15, 2021	1 net-nights
frame net (std 3/4 in)	Sep 15, 2021	2 net-nights

Common Fish Species Present

Yellow Perch

Walleye

Northern Pike

Black Bullhead

Bigmouth Buffalo

Common Carp

Green Sunfish

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	CI-80
AFS std gill net	Bigmouth Buffalo	6	6.0		0		0			
	Black Bullhead	18	17.0		0		0			
	Common Carp	5	5.0		60		20			
	Green Sunfish	1	1.0		0		0		88	
	Northern Pike	1	1.0		100		0		96	
	Yellow Perch	24	24.0		67	15	29	15	91	2
frame net (std 3/4 in)	Black Bullhead	469	166.5	41.6	3	1	0			
	Common Carp	9	4.5	4.6	33		22			
	Yellow Perch	68	33.0	92.3	82	7	39	9	91	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

Gear	Species	CPUE										Avg
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
AFS std gill net	Bigmouth Buffalo								0.0		6.0	3.00
	Black Bullhead								5.7		17.0	11.35
	Common Carp								0.3		5.0	2.65
	Green Sunfish								0.0		1.0	0.50
	Northern Pike								0.0		1.0	0.50
	Yellow Perch								9.7		24.0	16.85
frame net (std 3/4 in)	Bigmouth Buffalo		0.0	0.6	0.0	0.0			0.0		0.0	0.10
	Black Bullhead		34.2	23.2	53.8	124.0			94.4		166.5	82.68
	Black Crappie		0.0	0.0	0.0	0.0			0.0		0.0	0.00
	Channel Catfish		5.2	0.6	0.3	0.8			0.0		0.0	1.15
	Common Carp		6.2	3.6	3.3	6.8			0.2		4.5	4.10
	Freshwater Drum		0.0	0.0	0.0	0.8			0.0		0.0	0.13
	Green Sunfish		0.0	0.0	0.0	0.2			0.8		0.0	0.17
	Northern Pike		0.4	0.6	0.0	0.4			0.0		0.0	0.23
	Orangespotted Sunfish		0.0	0.0	0.0	0.0			0.0		0.0	0.00
	Sunfish Hybrid		0.0	0.0	0.0	0.0			0.0		0.0	0.00
	Walleye		0.2	0.0	0.3	0.6			0.0		0.0	0.18
Yellow Perch		0.6	5.2	2.3	1.8			9.2		33.0	8.68	

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	Bigmouth Buffalo	PSD													0
		PSD-P													0
	Black Bullhead	PSD										0			0
		PSD-P										0			0
	Common Carp	PSD										100			60
		PSD-P										0			20
	Green Sunfish	PSD													0
		PSD-P													0
		Wr													88
	Northern Pike	PSD													100
		PSD-P													0
		Wr													96
	Yellow Perch	PSD											76		67
		PSD-P											7		29
		Wr											98		91
frame net (std 3/4 in)	Bigmouth Buffalo	PSD				33									
		PSD-P				0									
	Black Bullhead	PSD		0	0	0	0					0			3
		PSD-P		0	0	0	0					0			0
		Wr		91											
	Common Carp	PSD		26	17	15	56					0			33
		PSD-P		0	0	0	3					0			22
		Wr		88											
	Green Sunfish	PSD							100				75		
		PSD-P							0				0		
		Wr							105						
	Northern Pike	PSD		100	100		100								
		PSD-P		50	0		100								
		Wr		93	98		82								
	Walleye	PSD		0		0	0								
PSD-P			0		0	0									
Wr			102		83	79									
Yellow Perch	PSD		100	35	44	0					74		82		

Gear	Species	Index	Year										
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
frame net (std 3/4 in)	Yellow Perch	PSD-P		33	27	0	0				13		39
		Wr		105	99	86	89				94		91

Fish Condition

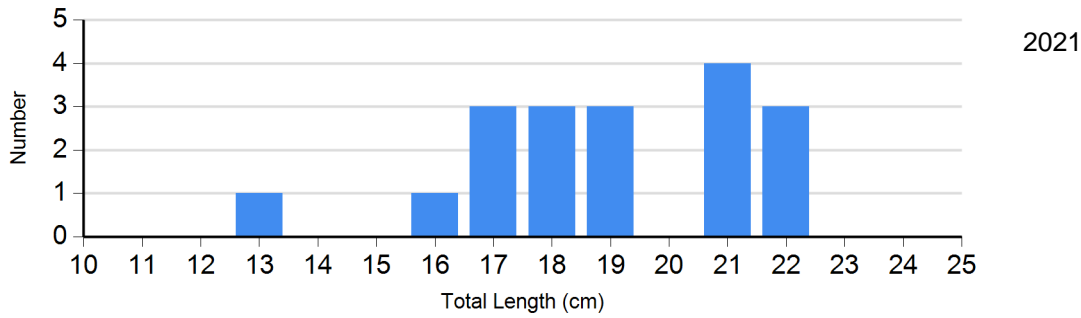
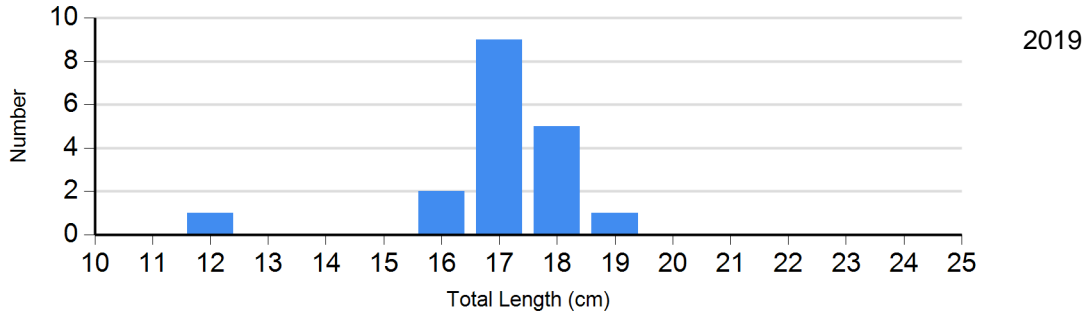
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Northern Pike Gill Net	2021	0		1	96	0		0	
Yellow Perch Gill Net	2019	7	99 (2.3)	20	97 (1.2)	2	97 (2.4)	0	
	2021	8	86 (3.4)	9	92 (1.8)	7	95 (3.6)	0	

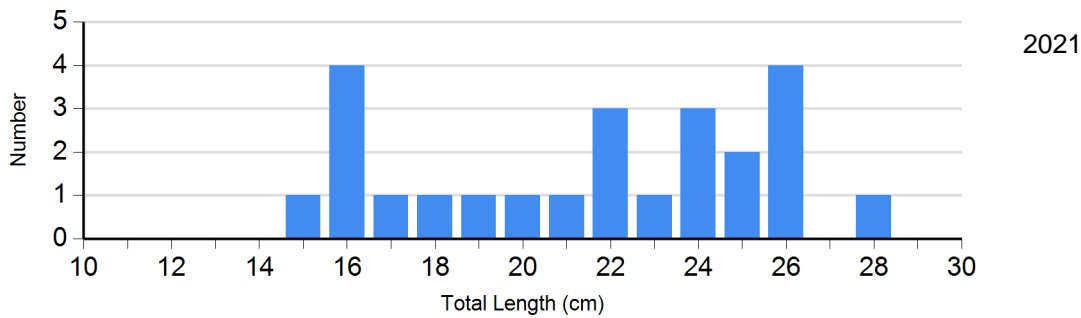
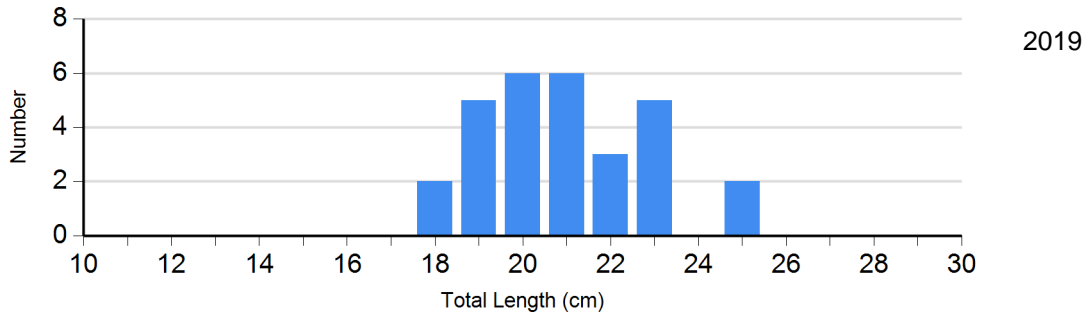
Length Frequency Distribution

Length frequency histogram of species sampled by year.

Species: Black Bullhead
Gear: AFS std gill net



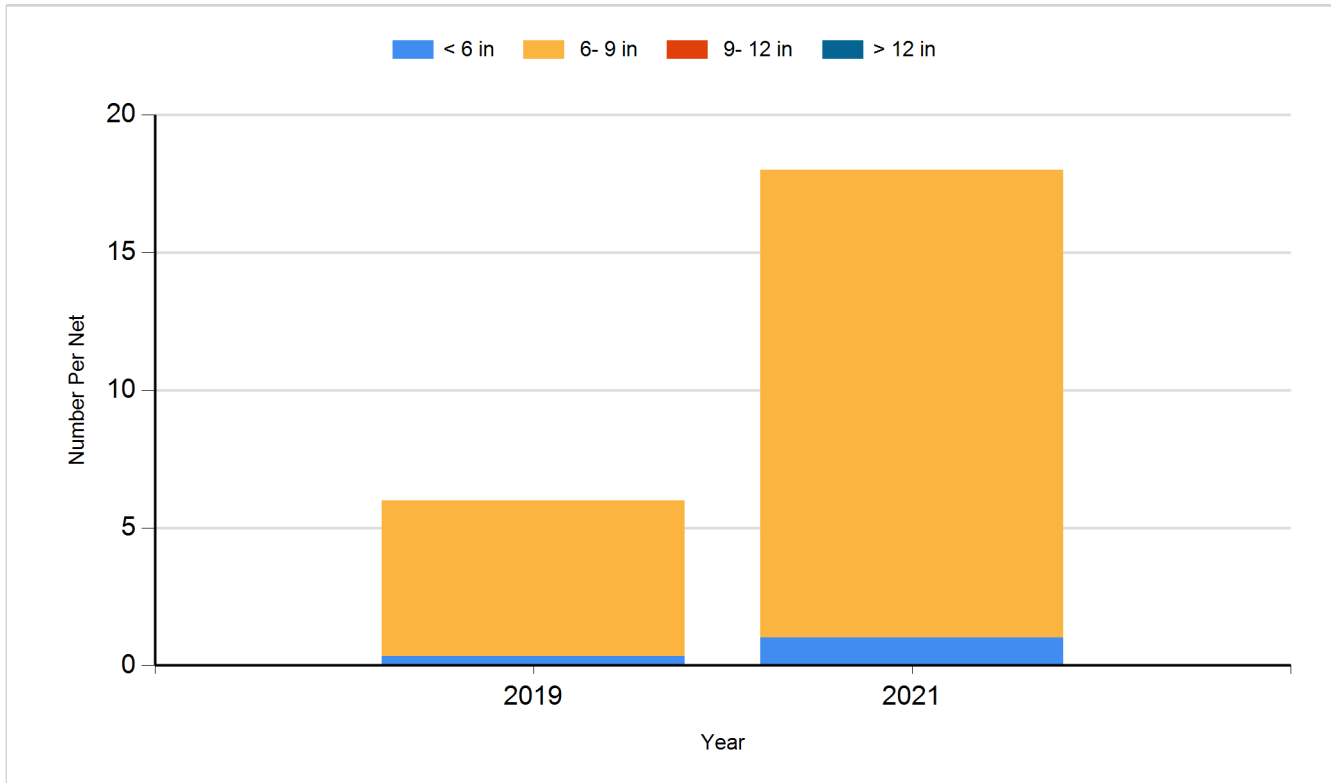
Species: Yellow Perch
Gear: AFS std gill net



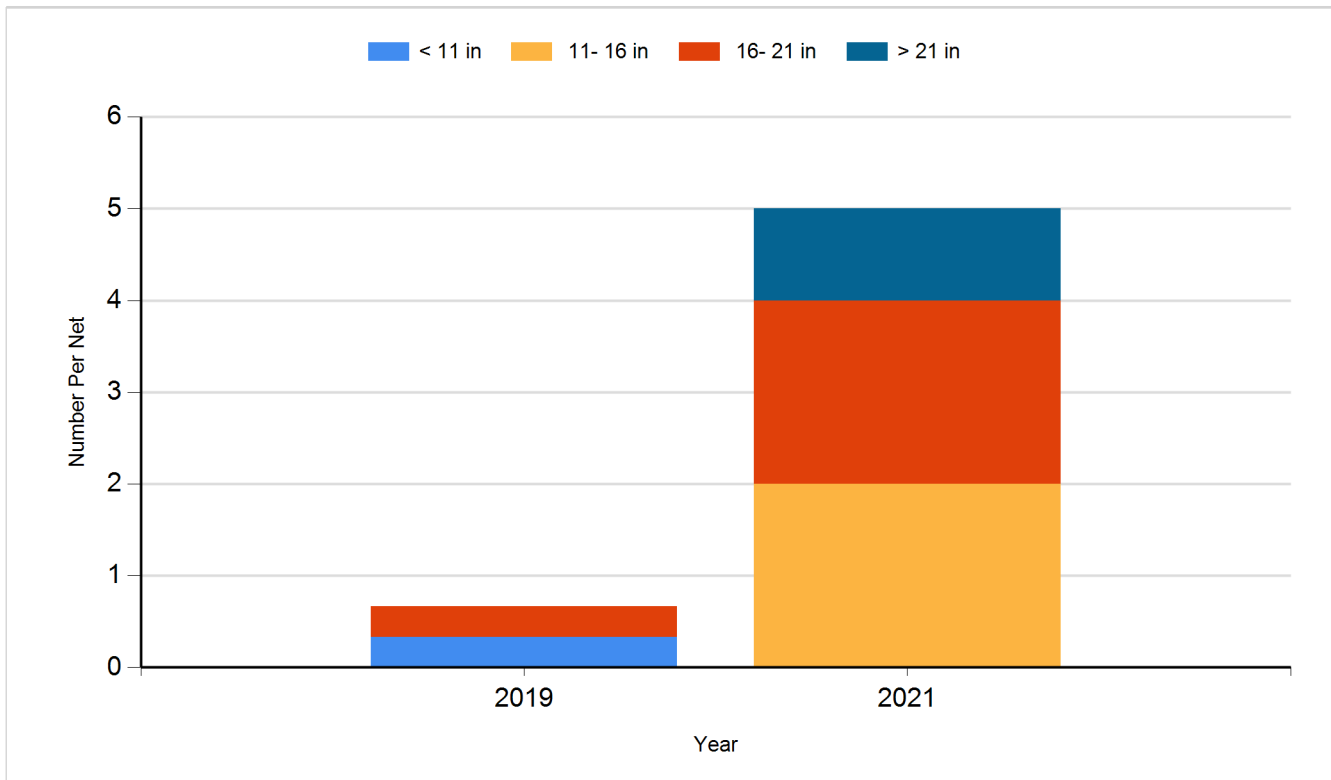
Historic Fish Sizes and Relative Abundance

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

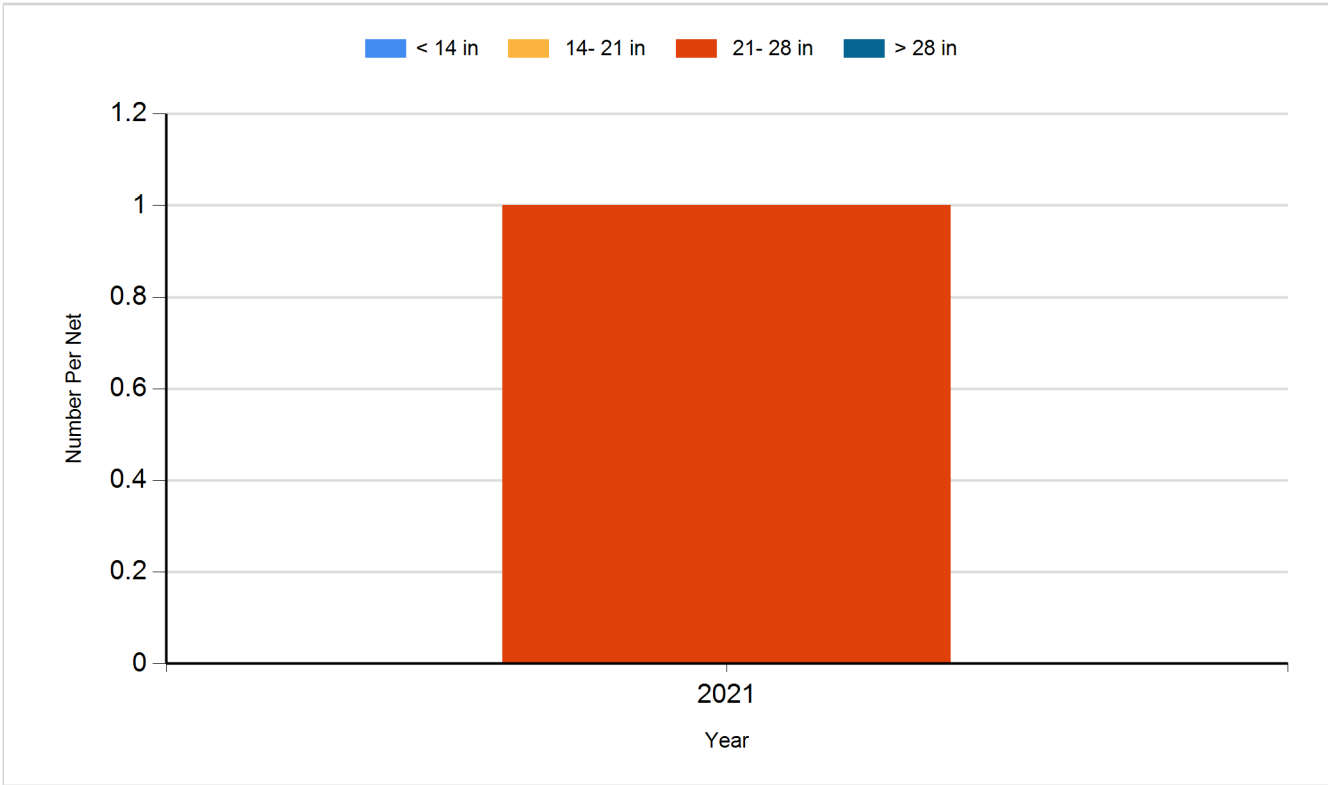
Species: Black Bullhead
Gear: AFS std gill net



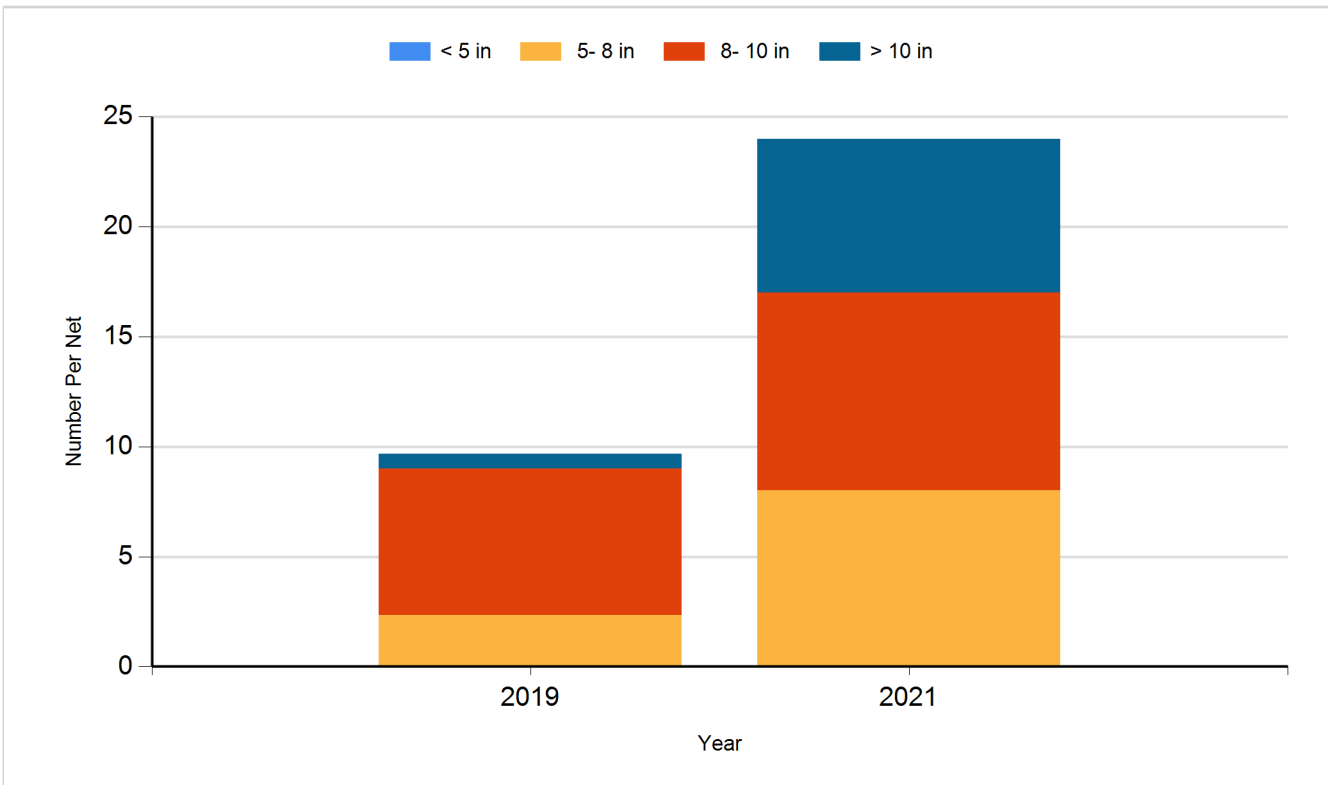
Species: Common Carp
Gear: AFS std gill net



Species: Northern Pike
Gear: AFS std gill net



Species: Yellow Perch
Gear: AFS std gill net



Fish Stocking

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

Year	Species	Size	Number
2010	White Bass	Adult	400
2012	Walleye	Small Fingerling	18,400
2012	Yellow Perch	Adult	3,816
2013	Northern Pike	Adult	384
2013	Yellow Perch	Adult	990
2014	Northern Pike	Adult	400
2014	Walleye	Fry	83,000
2016	Yellow Perch	Adult	3,420
2017	Yellow Perch	Adult	2,000
2018	Walleye	Large Fingerling	800
2018	White Bass	Adult	325
2018	Yellow Perch	Adult	3,600
2019	Walleye	Small Fingerling	5,010
2019	White Bass	Adult	722
2020	Yellow Perch	Adult	1,547
2021	Northern Pike	Adult	590
2021	Walleye	Fingerling	4,890