

# SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

Pierpont, Day County

MUD-Lake-43-000

2024

## Lake Information

**Name:** Pierpont **Maximum Depth:** 16 Feet  
**County:** Day **Mean Depth:** 8 Feet  
**Surface Area:** 71 Acres

## Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Aug 23, 2024	3 net-nights
frame net (std 3/4 in)	Aug 23, 2024	6 net-nights

## **Common Fish Species Present**

Yellow Perch

Northern Pike

Black Bullhead

Black Crappie

Walleye

Saugeye

Channel Catfish

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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	CI-80
AFS std gill net	Black Bullhead	97	31.0	18.6	44	7	0		106	1
	Northern Pike	8	2.7	1.7	75		0		89	5
	Walleye	4	1.0	0.0	67		67		96	5
	Yellow Perch	67	22.3	9.9	57	9	25	8	105	1
frame net (std 3/4 in)	Black Bullhead	208	25.7	12.4	15	4	0		97	1
	Black Crappie	29	4.5	3.5	22	13	15		109	2
	Channel Catfish	1	0.2	0.2	0		0		130	
	Northern Pike	14	2.0	1.3	75		8		84	2
	Saugeye	1	0.2	0.2	0		0		94	
	Walleye	1	0.2	0.2	0		0		93	
	Yellow Perch	67	11.2	6.0	33	8	15	7	100	1

## 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	
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024		
AFS std frame net	Black Bullhead		110.0										110.00
	Black Crappie		6.3										6.30
	Bluegill		0.3										0.30
	Green Sunfish		0.2										0.20
	Northern Pike		0.7										0.70
	Walleye		0.3										0.30
	Yellow Perch		1.3										1.30
AFS std gill net	Black Bullhead		69.5				86.0				31.0		62.17
	Black Crappie		0.8				4.0				0.0		1.60
	Bluegill		0.2				0.3				0.0		0.17
	Northern Pike		1.8				4.0				2.7		2.83
	Walleye		0.7				1.0				1.0		0.90
	Yellow Perch		3.7				24.3				22.3		16.77
frame net (std 3/4 in)	Black Bullhead						8.8				25.7		17.25
	Black Crappie						0.6				4.5		2.55
	Bluegill						1.8				0.0		0.90
	Channel Catfish						0.0				0.2		0.10
	Green Sunfish						0.3				0.0		0.15
	Northern Pike						0.5				2.0		1.25
	Saugeye						0.0				0.2		0.10
	Walleye						0.0				0.2		0.10
Yellow Perch						21.4				11.2		16.30	

## 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													
			2015	2016	2017	2018	2019	2020	2021	2022	2023	2024				
AFS std frame net	Black Bullhead	PSD		1												
		PSD-P		0												
		Wr		85												
	Black Crappie	PSD		25												
		PSD-P		9												
		Wr		114												
	Northern Pike	PSD		88												
		PSD-P		25												
		Wr		82												
	Walleye	PSD		100												
		PSD-P		0												
		Wr		87												
	Yellow Perch	PSD		69												
		PSD-P		50												
		Wr		94												
AFS std gill net	Black Bullhead	PSD		6					0						44	
		PSD-P		0					0						0	
		Wr		89					99						106	
	Black Crappie	PSD		40						58						
		PSD-P		20						8						
		Wr		129						112						
	Northern Pike	PSD		45						92						75
		PSD-P		0						8						0
		Wr		90						85						89
	Walleye	PSD		100						100						67
		PSD-P		0						67						67
		Wr		95						96						96
	Yellow Perch	PSD		77						45						57
		PSD-P		55						0						25
		Wr		95						96						105
frame net (std 3/4 in)	Black Bullhead	PSD							0						15	
		PSD-P							0						0	

Gear	Species	Index	Year										
			2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	
frame net (std 3/4 in)	Black Bullhead	Wr							95				97
		PSD							100				22
	Black Crappie	PSD-P							0				15
		Wr							114				109
		PSD											0
	Channel Catfish	PSD-P											0
		Wr											130
		PSD											0
	Northern Pike	PSD								50			75
		PSD-P								0			8
		Wr								86			84
	Saugeye	PSD											0
		PSD-P											0
		Wr											94
	Walleye	PSD											0
		PSD-P											0
		Wr											93
	Yellow Perch	PSD								43			33
		PSD-P								0			15
		Wr								100			100



## Length at Capture

Mean length at capture by age across years sampled, sample size (N).

Species: Walleye

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2024	4	256 (2)		536 (1)		553 (1)					
2016	8		450 (8)								

Species: Yellow Perch

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2024	67	182 (35)	245 (26)	276 (6)							
2016	44	191 (12)	254 (8)	265 (16)		286 (8)					

## **Fish Condition**

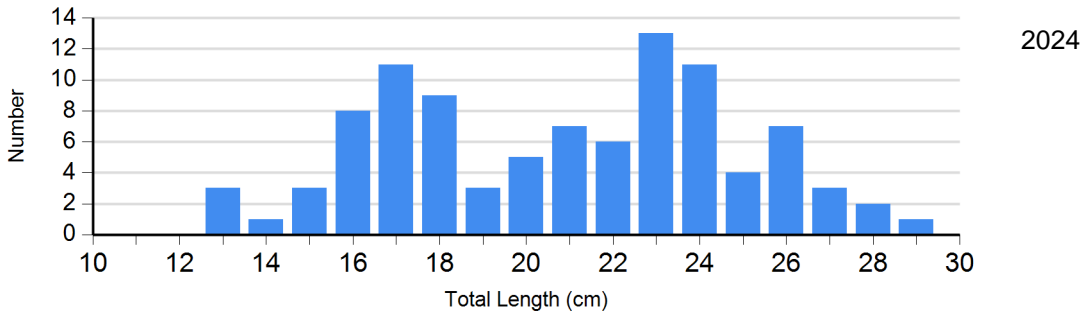
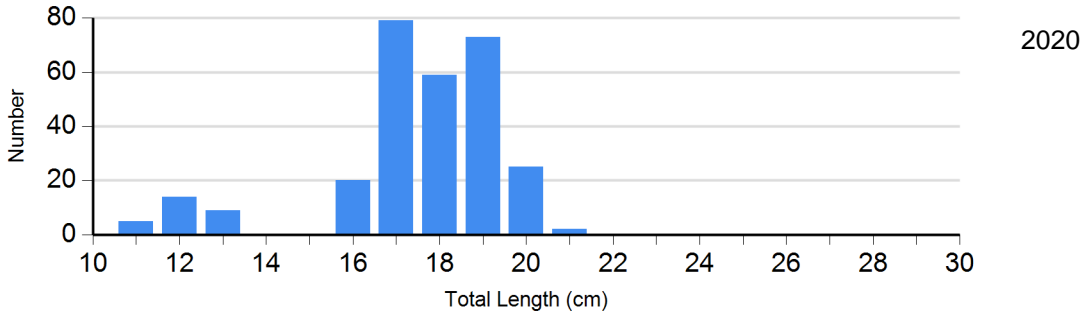
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Black Bullhead Gill Net	2020	258	99 (0.6)	0		0		0	
	2024	52	103 (1.0)	41	109 (1.4)	0		0	
Black Crappie Frame Net	2020	0		5	114 (2.7)	0		0	
	2024	21	112 (1.1)	2	97 (11.0)	1	103	3	97 (4.3)
Northern Pike Gill Net	2020	1	94	10	85 (2.7)	1	81	0	
	2024	2	76 (7.9)	6	93 (1.8)	0		0	
Walleye Gill Net	2020	0		1	96	2	96 (3.3)	0	
	2024	1	90	0		2	100 (4.5)	0	
Yellow Perch Gill Net	2020	40	101 (1.2)	33	90 (1.0)	0		0	
	2024	29	104 (1.2)	21	106 (1.5)	17	106 (1.4)	0	

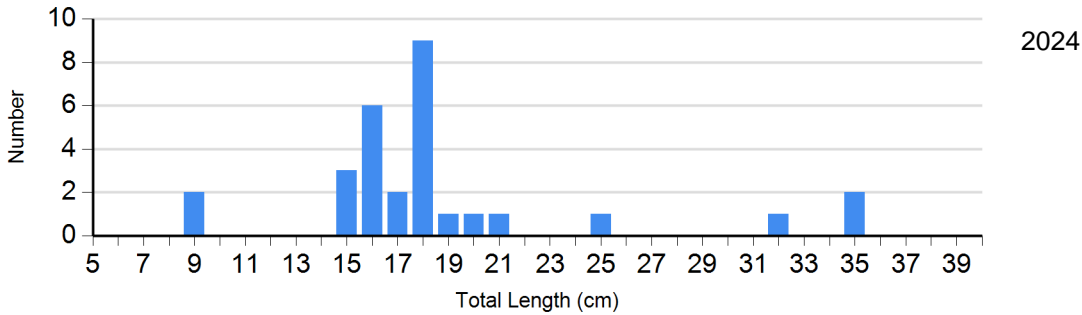
## Length Frequency Distribution

Length frequency histogram of species sampled by year.

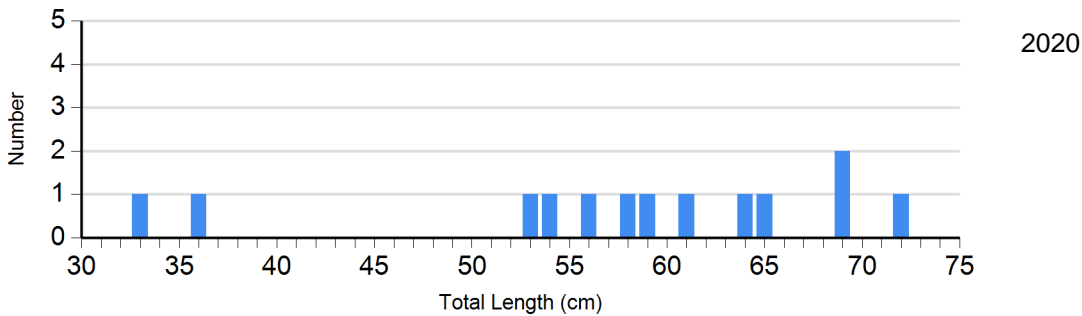
Species: Black Bullhead  
Gear: AFS std gill net



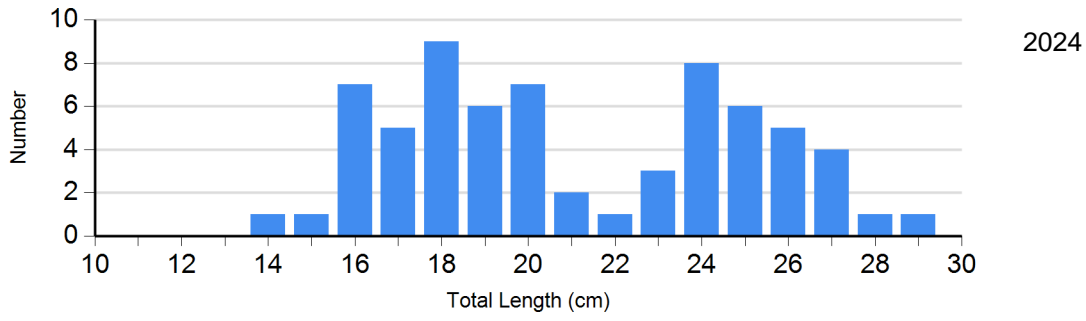
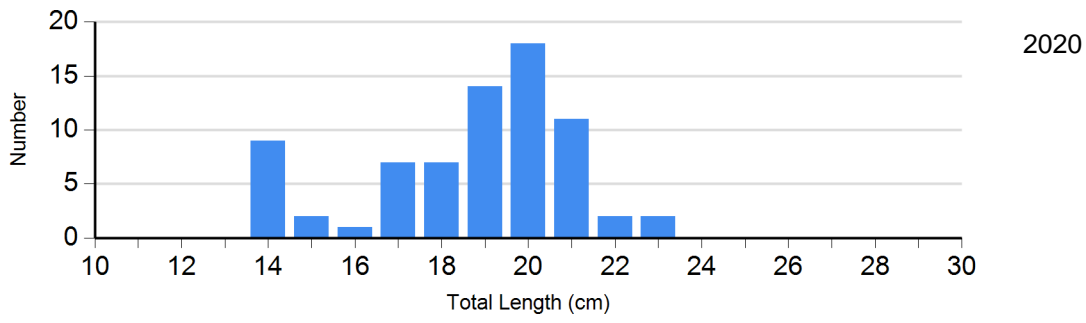
Species: Black Crappie  
Gear: frame net (std 3/4 in)



Species: Northern Pike  
Gear: AFS std gill net



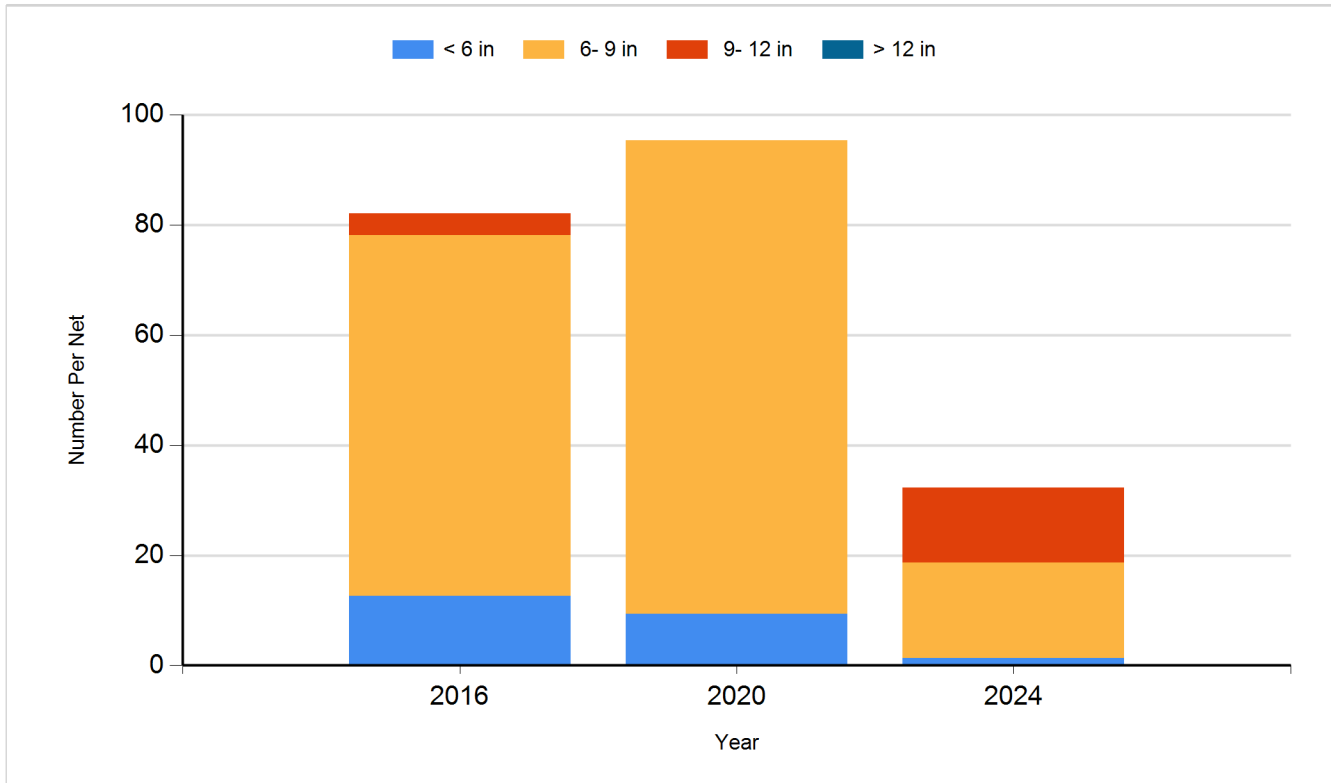
Species: Yellow Perch  
Gear: AFS std gill net



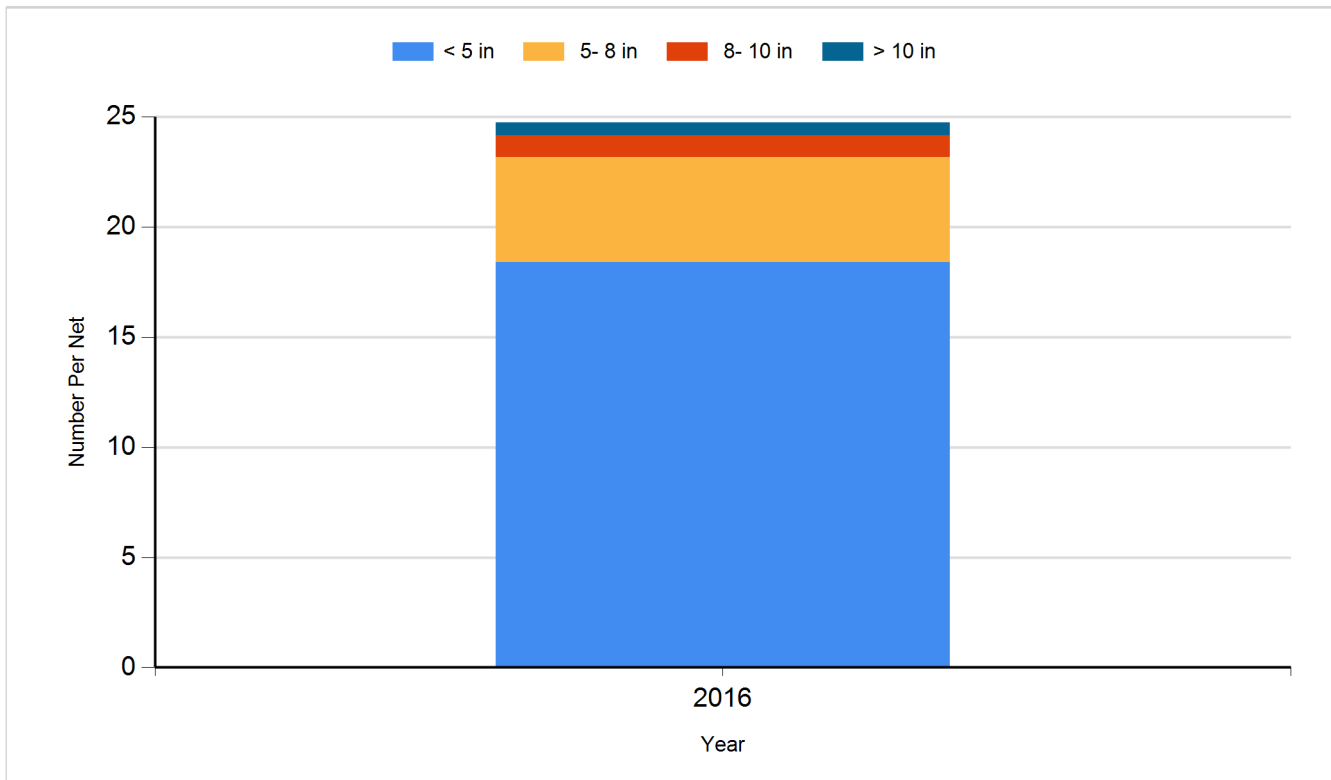
## Historic Fish Sizes and Relative Abundance

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

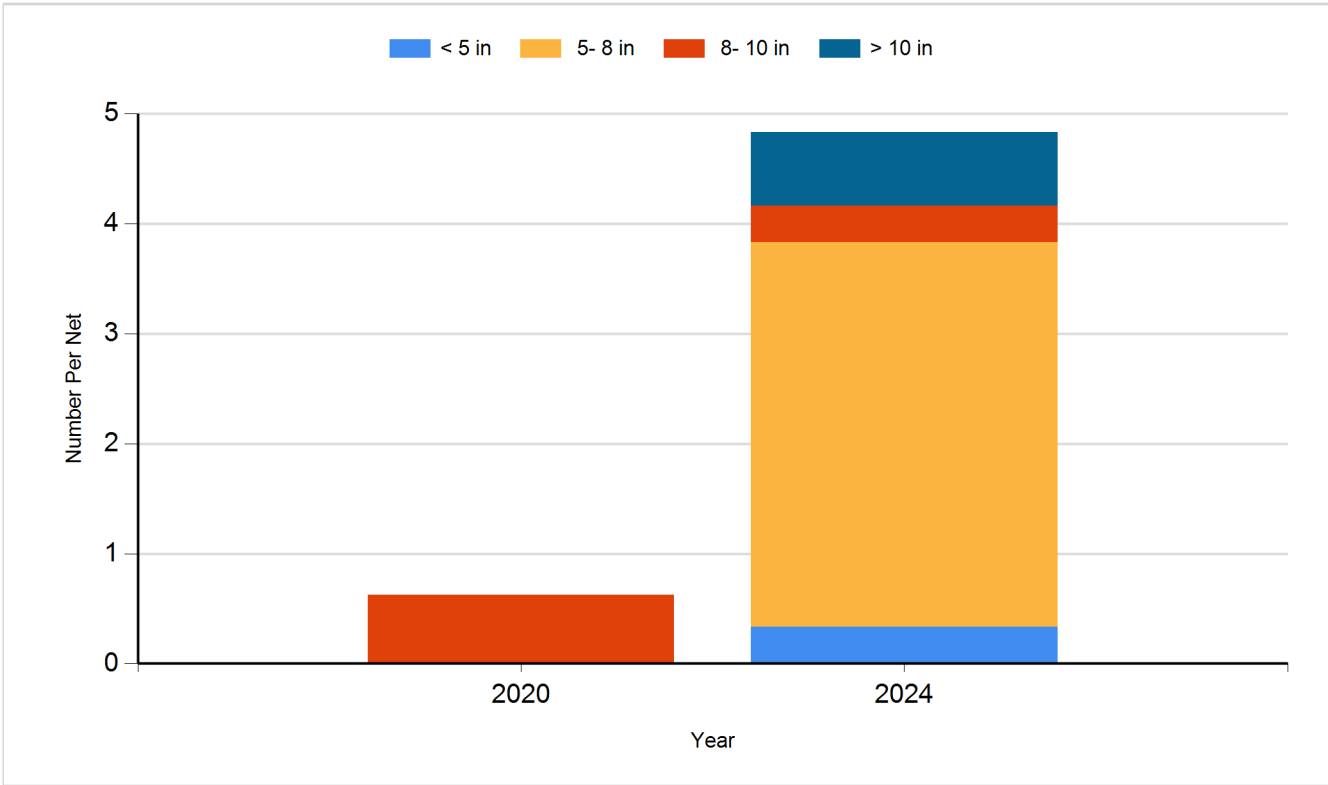
Species: Black Bullhead  
Gear: AFS std gill net



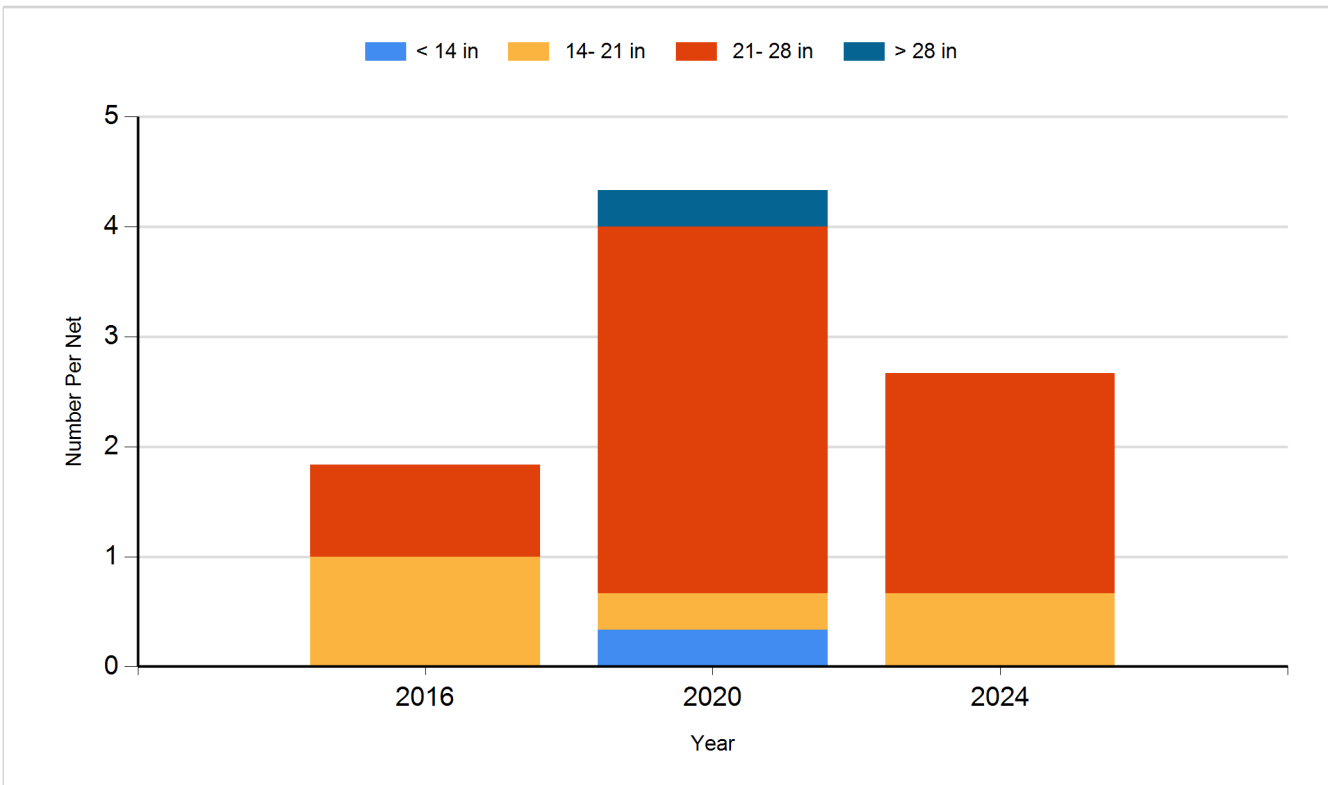
Species: Black Crappie  
Gear: AFS std frame net



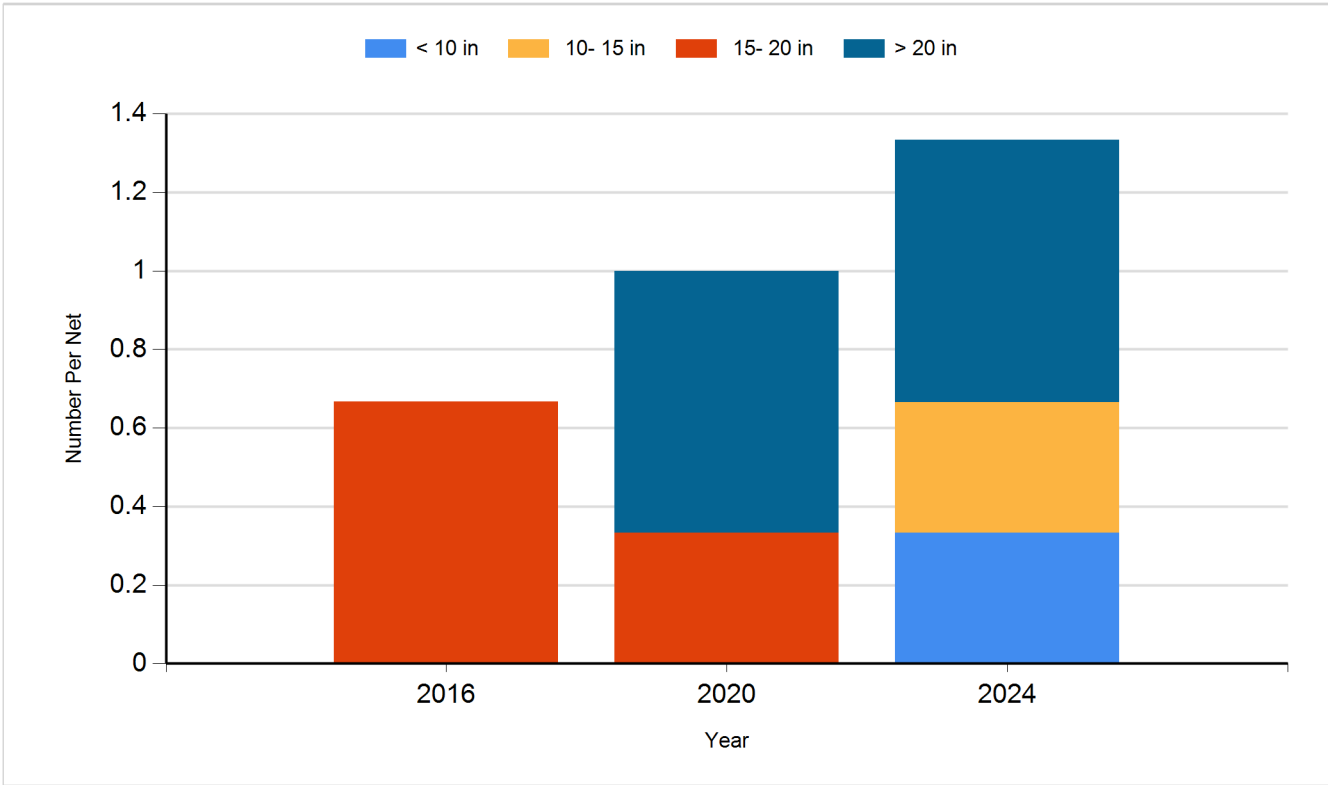
Species: Black Crappie  
Gear: frame net (std 3/4 in)



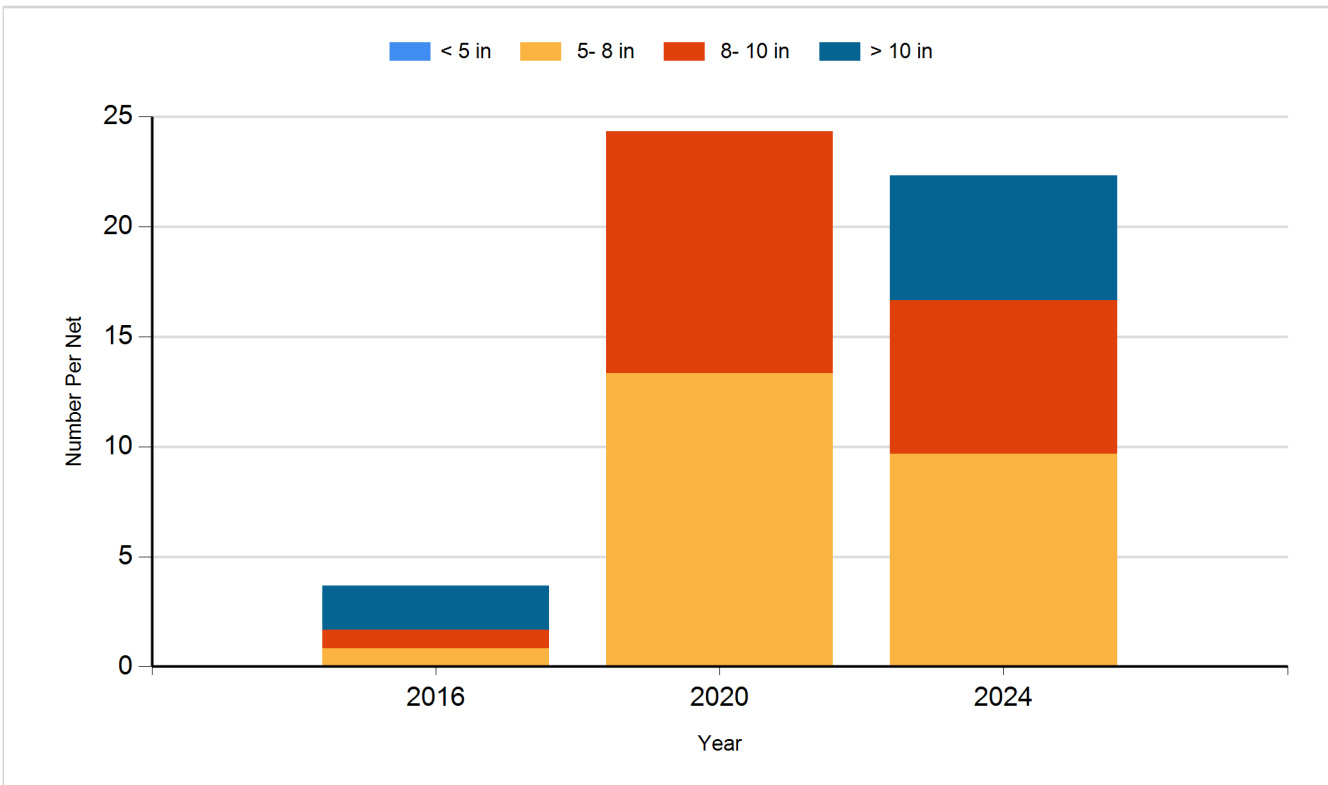
Species: Northern Pike  
Gear: AFS std gill net



Species: Walleye  
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
2013	Channel Catfish	Large Fingerling	1,926
2014	Walleye	Fry	100,000
2017	Saugeye	Fry	100,000
2021	Walleye	Fry	50,000
2022	Saugeye	Juvenile	5,250
2022	Walleye	Fry	50,000
2023	Channel Catfish	Juvenile	1,600
2023	Walleye	Fry	50,000
2024	Saugeye	Fry	50,000