White Lake Survey Summary

White Lake, located 6.0 miles east and 4.0 miles north of Britton, is managed as a black crappie, walleye, and yellow perch fishery but other fish species (e.g., northern pike, smallmouth bass) are present and contribute to the fishery.

- **Black crappie**. Fewer black crappies were sampled in 2024 than in 2020. At 4.5 per frame net, relative abundance was considered low. Sampled black crappies ranged in length from 10.6 to 13.0 inches. Five year classes contributed to the frame net catch. Individuals from the 2017 (age-7) cohort, which had a mean length at capture of 12.0 inches, were the most abundant accounting for 59% of black crappies sampled.

- **Walleye (includes saugeye).** Walleye numbers were higher in 2024 than in 2020. At 5.7 per gill net, relative abundance was moderate to high for White Lake. Sampled walleyes ranged in length from 9.4 to 28.3 inches, of those at least 10.0 inches, 74% were $\geq$ 15.0 inches and 24% were $\geq$ 20.0 inches. Nine year classes contributed to the gill net catch, none were particularly strong. Individuals from the 2022 (age-2) cohort, which coincided with a small fingerling stocking, were the most numerous accounting for 11 of 35 fish in the sample. The oldest fish sampled was from the 2011 (age-13) year class. The 2024 sample suggests good growth with mean length at captures at age 3 and age 4 of 16.3 and 16.6 inches.

- **Yellow Perch**. Yellow perch were not abundant (3.2 per gill net) and relative abundance was considered low in 2024. Those sampled ranged in length from 6.7 to 11.0 inches, 68% were $\geq$ 8.0 inches and 53% were $\geq$ 10.0 inches. Five consecutive year classes (2018 – 2022) were sampled, each was represented by seven of fewer individuals. Although sample sizes are low, yellow perch growth appears to be moderate with mean length at captures > 9.0 inches at age 3 in surveys conducted since 2016.

For more detailed results see the computer generated South Dakota Statewide Fisheries Survey for White (Marshall; below).

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
White, Marshall County
WWR-Lake-42-000
2024

Lake Information

Name: White
County: Marshall
Surface Area: 185 Acres
Maximum Depth: 20 Feet
Mean Depth: 8 Feet

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	May 22, 2024	3 net-nights
AFS std gill net	May 23, 2024	3 net-nights
frame net (std 3/4 in)	May 22, 2024	6 net-nights
frame net (std 3/4 in)	May 23, 2024	6 net-nights

Common Fish Species Present

Walleye

Black Crappie

Yellow Perch

White Sucker

Smallmouth Bass

Northern Pike

Common Carp

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)
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**

			Abundance		Stock Density Indices				Condition	
Gear	Species	Sample Size (n)	CPUE	CI-80	PSD	CI-80	PSD-P	CI-80	Wr	CI-80
AFS std gill net	Common Carp	2	0.3	0.3	100		100			
	Northern Pike	3	0.5	0.5	33		0		85	5
	Walleye	35	5.7	1.5	74	12	24	11	90	1
	White Sucker	13	2.2	1.2	100		100		104	4
	Yellow Perch	19	3.2	2.2	68	17	53	18	94	2
frame net (std 3/4 in)	Black Crappie	54	4.5	1.8	100		100		94	1
	Common Carp	2	0.2	0.2	100		100		91	8
	Northern Pike	6	0.5	0.3	67		17		90	2
	Smallmouth Bass	12	0.9	0.4	91		82		95	4
	Walleye	16	1.3	0.6	60	21	33		84	7
	White Sucker	81	6.8	3.3	100		100		101	1
	Yellow Perch	7	0.6	0.4	86		14		98	8

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.

***AFS standard frame nets used in 2016 (Avg excludes 2016)**

		CPUE										
Gear	Species	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Avg
AFS std gill net	Black Bullhead		12.0				0.5				0.0	4.17
	Black Crappie		1.0				0.2				0.0	0.40
	Common Carp		0.3				0.8				0.3	0.47
	Northern Pike		0.5				0.2				0.5	0.40
	Smallmouth Bass		0.0				0.2				0.0	0.07
	Walleye		3.0				3.3				5.7	4.00
	White Sucker		7.2				3.8				2.2	4.40
	Yellow Perch		7.8				3.7				3.2	4.90
frame net (std 3/4 in)*	Black Bullhead		9.8				2.2				0.0	1.10
	Black Crappie		12.8				12.3				4.5	8.40
	Common Carp		0.5				0.0				0.2	0.10
	Northern Pike		0.1				0.2				0.5	0.35
	Smallmouth Bass		0.0				2.3				0.9	1.60
	Walleye		0.9				0.5				1.3	0.90
	White Sucker		8.5				0.6				6.8	3.70
	Yellow Perch		2.5				2.7				0.6	1.65

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. ***AFS standard frame nets used in 2016**

			Year									
Gear	Species	Index	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
AFS std gill net	Walleye	PSD		61				80				74
		PSD-P		33				60				24
		Wr		78				85				90
	Yellow Perch	PSD		98				14				68
		PSD-P		23				0				53
		Wr		94				99				94
frame net (std 3/4 in)*	Black Crappie	PSD		99				63				100
		PSD-P		14				17				100
		Wr		99				90				94

Length at Capture

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

Species: Black Crappie

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2024	54				285 (17)	295 (2)	304 (2)	305 (32)			332 (1)
2020	148	105 (1)	161 (2)	201 (120)	265 (10)	294 (1)		305 (10)		309 (2)	318 (2)
2016	153			229 (134)		282 (6)	292 (13)				

Species: Walleye

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2024	34	249 (1)	364 (11)	415 (6)	422 (7)	490 (2)	496 (1)				634 (6)
2020	22		263 (6)		538 (2)		511 (8)	564 (4)	537 (1)		700 (1)
2016	18		271 (2)	343 (6)	382 (1)		524 (5)	603 (4)			

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	19		188 (7)	243 (2)	263 (3)	281 (1)	275 (6)				
2020	22		183 (21)	241 (1)							
2016	47		191 (2)	236 (33)		260 (8)	266 (4)				

Fish Condition

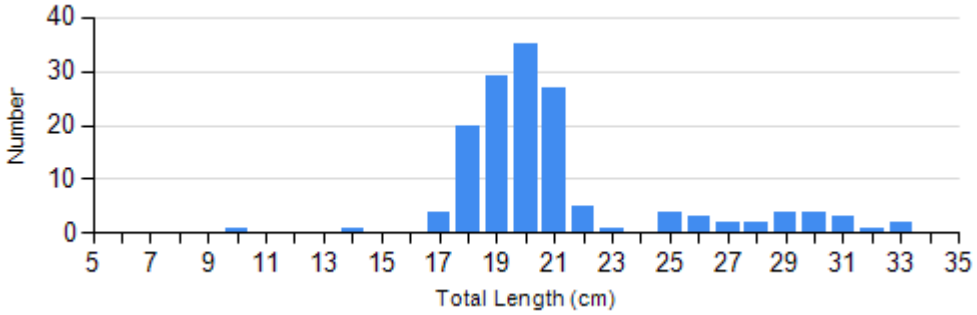
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2020	54	95 (3.0)	68	91 (0.6)	15	81 (1.2)	10	78 (1.8)
	2024	0		0		25	95 (1.5)	29	92 (1.2)
Walleye Gill Net	2020	4	78 (1.7)	4	84 (1.7)	11	87 (1.8)	1	88
	2024	9	92 (1.6)	17	92 (1.4)	4	84 (4.8)	4	83 (1.2)
Yellow Perch Gill Net	2020	19	99 (1.9)	3	98 (2.5)	0		0	
	2024	6	103 (2.0)	3	90 (1.2)	10	91 (1.6)	0	

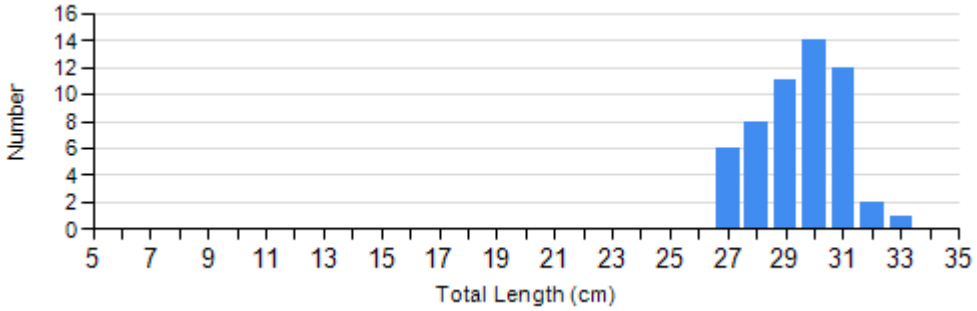
Length Frequency Distribution

Length frequency histogram of species sampled by year.

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

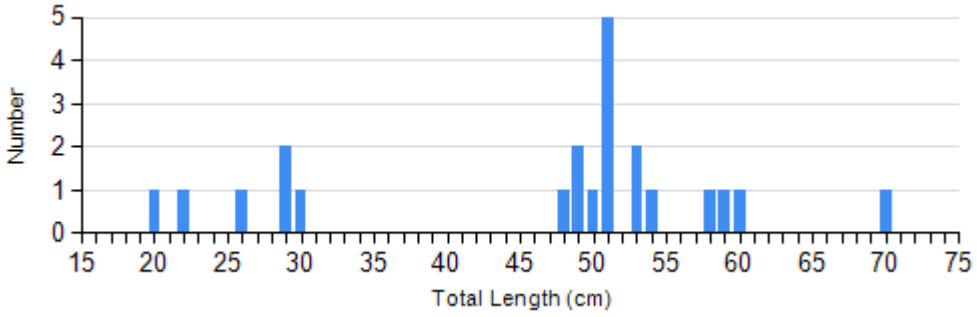


2020

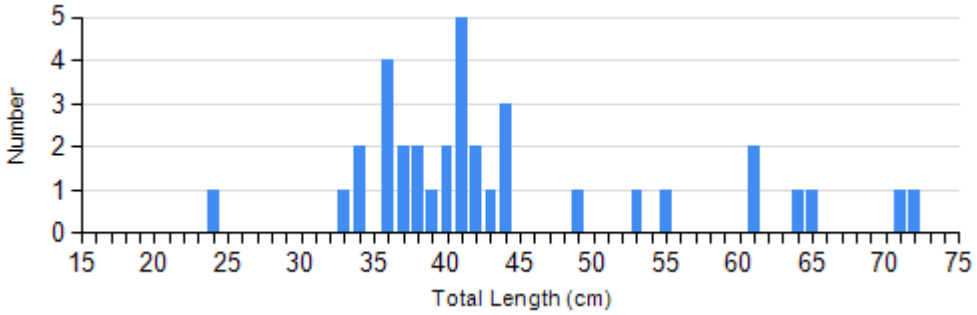


2024

Species: Walleye
Gear: AFS std gill net

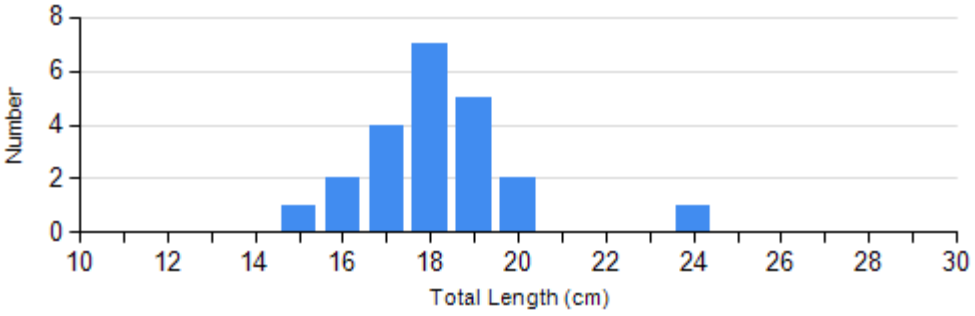


2020

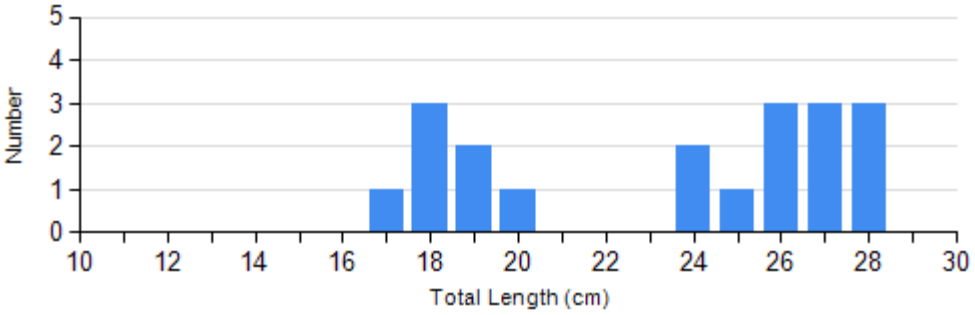


2024

Species: Yellow Perch
Gear: AFS std gill net



2020

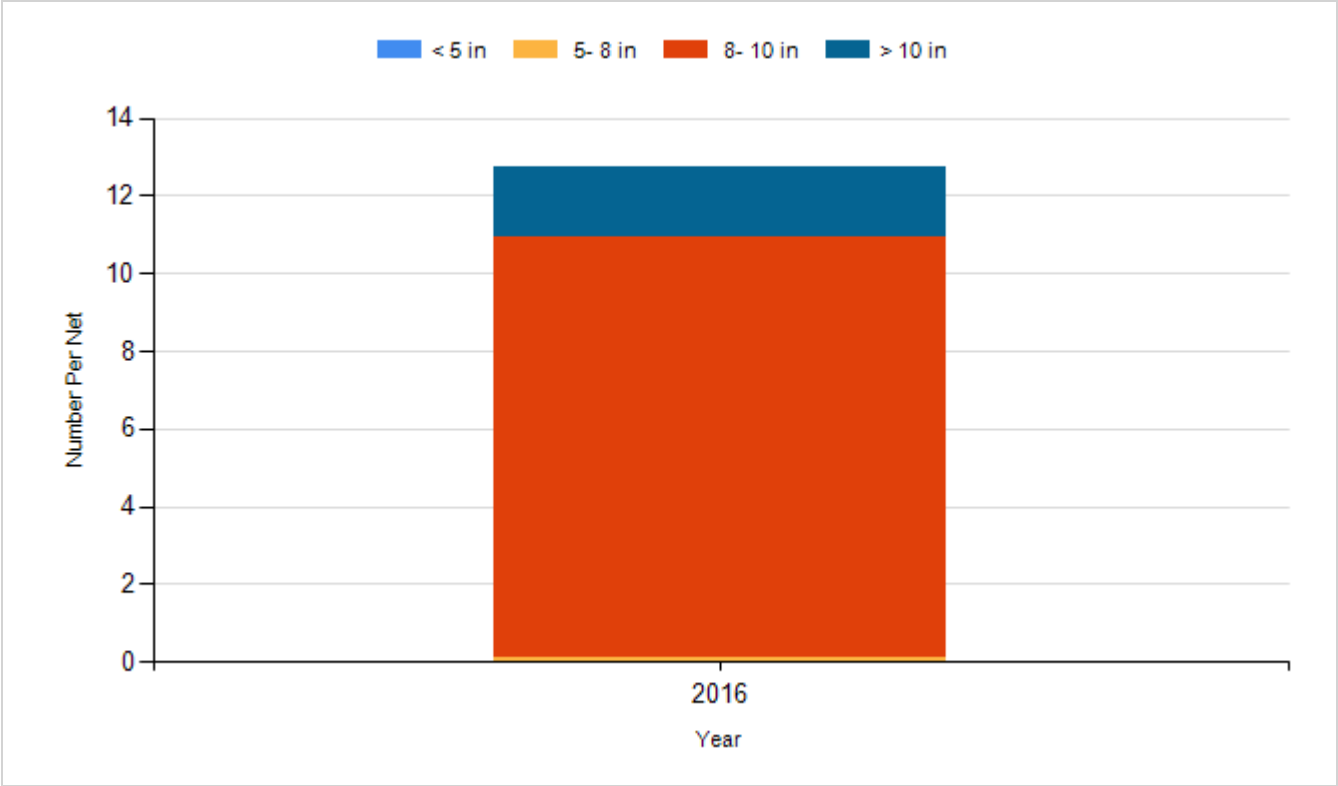


2024

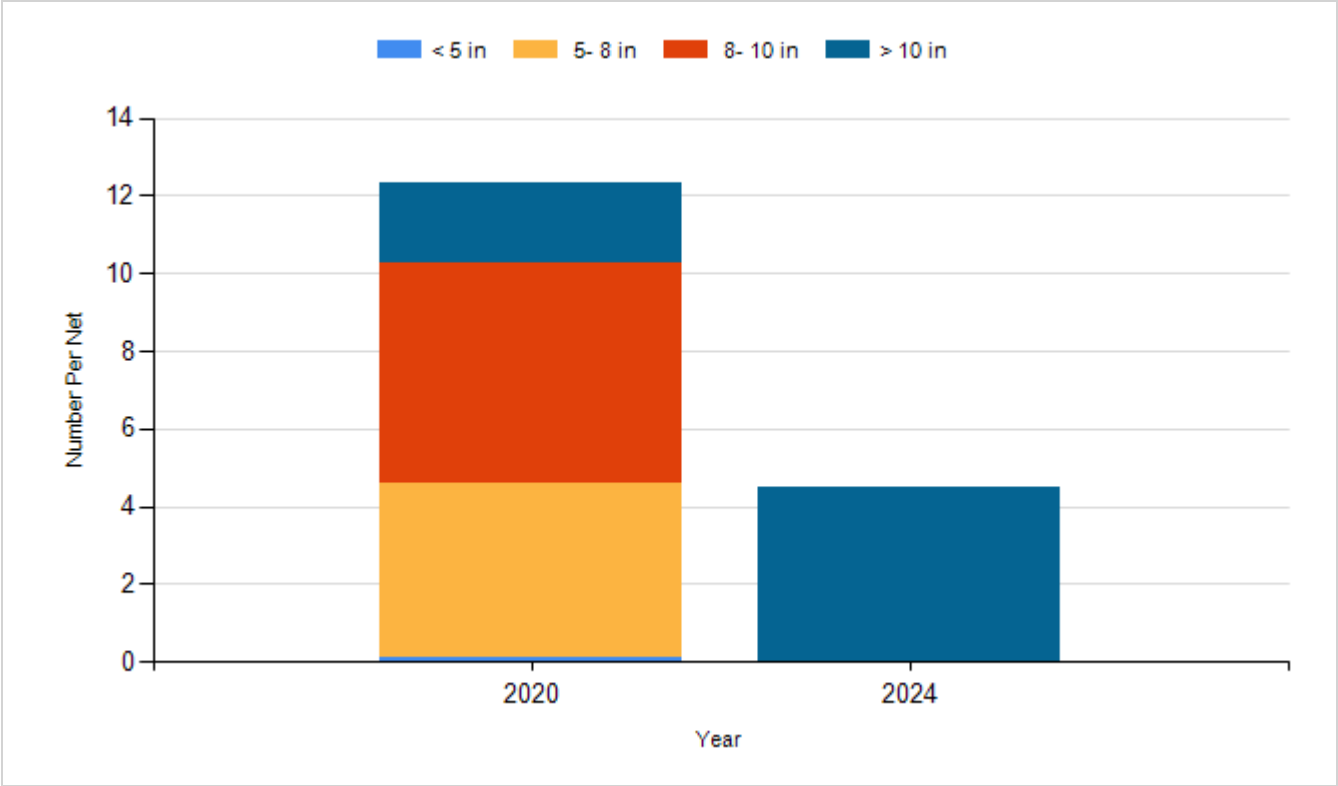
Historic Fish Sizes and Relative Abundance

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

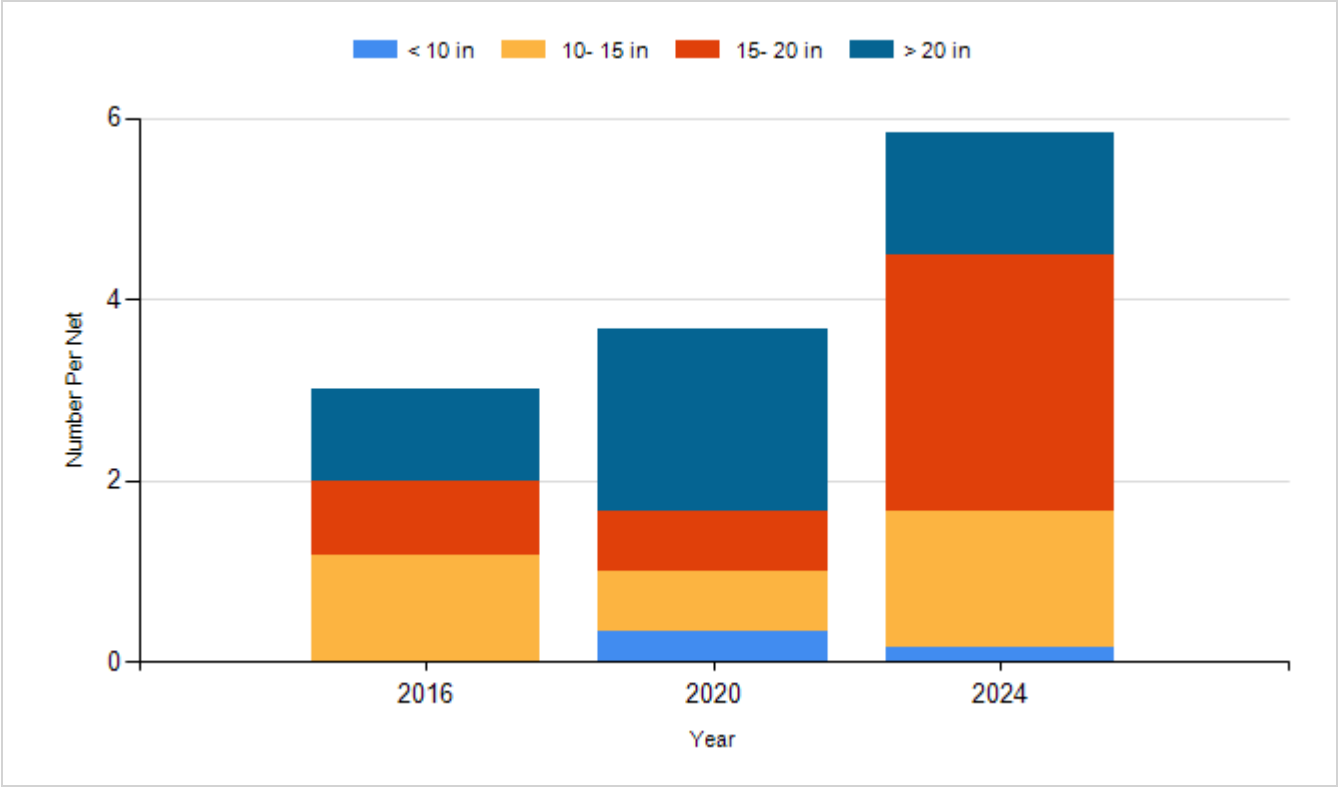
Species: Black Crappie
Gear: AFS std frame net



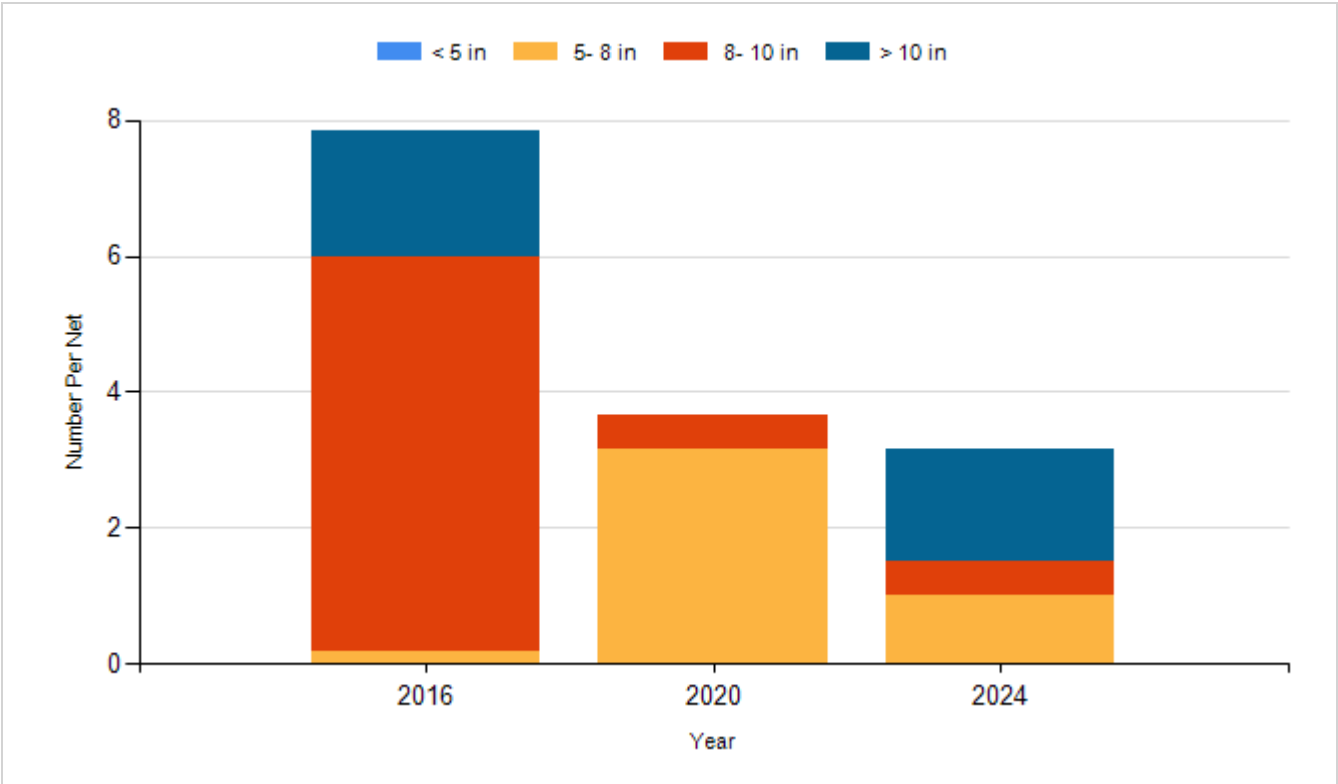
Species: Black Crappie
Gear: frame net (std 3/4 in)



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
2014	Walleye	Fry	100,000
2016	Saugeye	Small Fingerling	9,680
2018	Saugeye	Fry	95,000
2021	Saugeye	Fingerling	16,900
2022	Saugeye	Juvenile	14,445
2023	Saugeye	Fry	100,000