2023 Roosevelt Lake (Tripp County)

Roosevelt is located 9 miles west and 2 miles south of Gregory, SD. It is an 86-acre impoundment with a mean depth of 6 feet and maximum depth of 18 feet. Access locations at Roosevelt Lake consist of a concrete slab boat ramp and a maintained shore fishing access along the northwestern part of the lake. It is managed as a multi-species fishery consisting of Black Crappie, Bluegill, Largemouth Bass and Walleye. Other species present are Northern Pike and Yellow Perch. Sampling occurs every three years, consisting of frame nets targeting all species and gillnets targeting Walleye. Fall electrofishing assessment of the 2023 Saugeye stocking also occurred in 2023.

- **Black Crappie:** The catch rate of Black Crappie in 2023 was 2.6 fish per frame net. Of the Black Crappie sampled, 27% were 8 inches or longer. Black Crappie condition was good with a relative weight (Wr) of 115*.

- **Bluegill:** The catch rate of Bluegill in 2023 was 15.2 fish per frame net. Of the Bluegill sampled, 49% were 6 inches or longer, with 11% longer then 8 inches. Bluegill condition was good with a relative weight (Wr) of 99*.

- **Largemouth Bass:** Largemouth Bass sampling was not conducted in 2023 due to cold water temps.

- **Saugeye:** No Saugeye were sampled in 2023.

- **Walleye:** No Walleye were sampled in 2023.

* 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.

Created 1/29/2024 BV

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Roosevelt, Tripp County
PON-Lake-203-000
2023

Lake Information

Name: Roosevelt
County: Tripp
Legal Description: T97-R74-S20
Surface Area: 86 Acres
Maximum Depth: 18 Feet
Mean Depth: 6 Feet

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jun 26, 2023	2 net-nights
fall night EF-WAE	Oct 19, 2023	3600 seconds
frame net (std 3/4 in)	Jun 26, 2023	5 net-nights
frame net (std 3/4 in)	Jun 27, 2023	5 net-nights

Common Fish Species Present

Largemouth Bass

Bluegill

Black Crappie

Walleye

Northern Pike

Yellow Perch

Black Bullhead

Golden Shiner

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	Black Bullhead	1	0.5	1.5	0		0		85	
	Golden Shiner	1	0.0	0.0						
	Largemouth Bass	3	1.5	1.5	100		100		101	1
	Northern Pike	3	1.5	1.5	100		67		82	3
	Yellow Perch	1	0.5	1.5	100		0		90	
frame net (std 3/4 in)	Black Bullhead	1	0.1	0.1	100		100		98	
	Black Crappie	30	2.6	1.2	27	14	0		115	3
	Bluegill	152	15.2	6.3	49	6	11	4	99	2
	Golden Shiner	1	0.0	0.0						
	Largemouth Bass	3	0.3	0.2	100		100		100	4
	Northern Pike	15	1.5	0.6	100		47	21	83	2
	Yellow Perch	3	0.3	0.2	100		33		86	11

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**

		CPUE										
Gear	Species	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Avg
AFS std frame net	Black Crappie				2.6							2.60
	Bluegill				5.3							5.30
	Northern Pike				0.5							0.50
	Yellow Perch				2.1							2.10
AFS std gill net	Black Bullhead				0.0			1.0			0.5	0.50
	Black Crappie				0.5			2.0			0.0	0.83
	Bluegill				0.0			2.0			0.0	0.67
	Golden Shiner				0.0			0.0			0.0	0.00
	Largemouth Bass				0.5			0.0			1.5	0.67
	Northern Pike				3.0			6.5			1.5	3.67
	Yellow Perch				4.0			17.0			0.5	7.17
boat shocker (night)	Largemouth Bass			82.5	76.0	40.0	103.5	94.5				79.30
frame net (std 3/4 in)	Black Bullhead							0.6			0.1	0.35
	Black Crappie							18.7			2.6	10.65
	Bluegill							55.3			15.2	35.25
	Golden Shiner							0.0			0.0	0.00
	Green Sunfish							1.0			0.0	0.50
	Largemouth Bass							0.1			0.3	0.20
	Northern Pike							2.5			1.5	2.00
	Walleye							0.0			0.0	0.00
	Yellow Perch							2.5			0.3	1.40

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.

			Year									
Gear	Species	Index	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
AFS std frame net	Black Crappie	PSD				92						
		PSD-P				23						
		Wr				106						
	Bluegill	PSD				36						
		PSD-P				23						
		Wr				111						
	Northern Pike	PSD				60						
		PSD-P				20						
		Wr				85						
	Yellow Perch	PSD				81						
		PSD-P				38						
		Wr				93						
AFS std gill net	Black Bullhead	PSD							50			0
		PSD-P							0			0
		Wr							124			85
	Black Crappie	PSD				100			25			
		PSD-P				0			0			
		Wr				120			113			
	Bluegill	PSD							50			
		PSD-P							0			
		Wr							103			
	Largemouth Bass	PSD				100						100
		PSD-P				100						100
		Wr				86						101
	Northern Pike	PSD				100			62			100
		PSD-P				50			0			67
		Wr				91			90			82
	Yellow Perch	PSD				25			79			100
		PSD-P				0			12			0
		Wr				101			91			90
boat shocker (night)	Largemouth Bass	PSD			33	53	54	66	41			
		PSD-P			33	33	18	26	20			

			Year									
Gear	Species	Index	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
boat shocker (night)	Largemouth Bass	Wr			111	112	110	112	115			
frame net (std 3/4 in)	Black Bullhead	PSD							33			100
		PSD-P							17			100
		Wr							97			98
	Black Crappie	PSD							79			27
		PSD-P							4			0
		Wr							95			115
	Bluegill	PSD							97			49
		PSD-P							7			11
		Wr							95			99
	Largemouth Bass	PSD							100			100
		PSD-P							100			100
		Wr							107			100
	Northern Pike	PSD							68			100
		PSD-P							16			47
		Wr							85			83
	Yellow Perch	PSD							64			100
		PSD-P							24			33
		Wr							89			86

Back-Calculated Lengths

Mean species back-calculated total length (mm) at age, standard error (SE), and sample size (N).

Species: Bluegill

Year Class	Age	N	Mean back-calculated length (SE) at age									
			1	2	3	4	5	6	7	8	9	10
2022	1	7	73 (2.7)									
2021	2	14	63 (2.2)	92 (2.8)								
2020	3	16	63 (2.4)	97 (2.7)	130 (3.1)							
2019	4	11	64 (5)	103 (5.3)	141 (6.5)	164 (5.9)						
2018	5	8	53 (4.1)	95 (5.7)	138 (6.3)	168 (5.2)	186 (4.6)					
2017	6	1	44	74	108	147	166	180				
Weighted Mean		57	63	96	135	165	184	180				

Year Class	Age	N	11	12	13	14	15	16	17	18	19	20
2022	1	7										
2021	2	14										
2020	3	16										
2019	4	11										
2018	5	8										
2017	6	1										
Weighted Mean		57										

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+
2020	193	127 (2)	139 (36)	199 (18)	218 (111)	232 (27)	255 (2)				
2017	97	101 (71)		211 (18)	206 (2)	297 (3)	303 (3)				

Species: Bluegill

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2023	152	100 (14)	117 (50)	153 (47)	180 (25)	202 (16)	194 (1)				
2020	553		159 (80)	175 (409)	195 (65)						
2017	42		135 (27)	195 (6)	216 (3)	253 (5)	255 (2)				

Species: Largemouth Bass

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2020	214	141 (1)	177 (28)	231 (49)	262 (50)	331 (46)	376 (21)	448 (15)	436 (11)		
2018	90	177 (8)	224 (29)	279 (14)	328 (26)	421 (6)	455 (3)	443 (3)	436 (1)	479 (1)	

Species: Yellow Perch

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2020	34	148 (2)	175 (4)	221 (7)	239 (17)	242 (4)					

Fish Condition

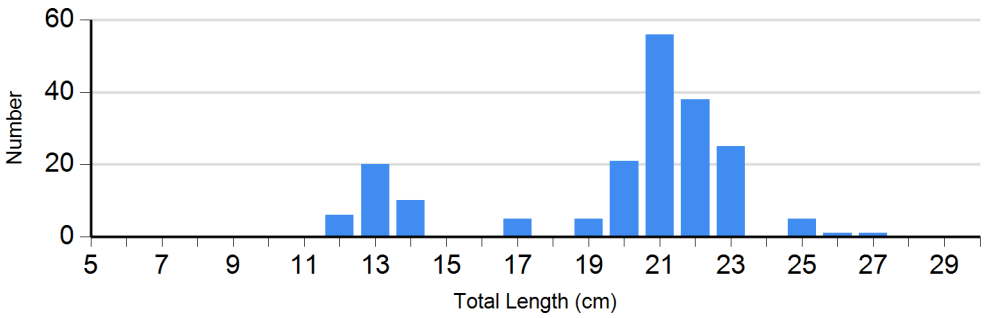
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Black Bullhead Gill Net	2020	1	132	1	116	0		0	
	2023	1	85	0		0		0	
Black Crappie Frame Net	2020	40	97 (1.7)	140	95 (0.8)	7	91 (2.4)	0	
	2023	19	116 (2.7)	7	114 (3.4)	0		0	
Bluegill Frame Net	2020	16	96 (3.0)	499	95 (0.6)	38	95 (1.5)	0	
	2023	77	95 (2.3)	59	103 (1.4)	16	103 (3.0)	0	
Largemouth Bass Electro Fishing	2019	71	115 (4.0)	82	108 (1.3)	53	112 (1.5)	1	110
	2020	112	115 (1.5)	40	113 (1.7)	37	116 (1.4)	0	
Northern Pike Gill Net	2020	5	91 (1.4)	8	89 (1.5)	0		0	
	2023	0		1	87	2	80 (1.4)	0	
Yellow Perch Gill Net	2020	7	100 (1.6)	23	88 (1.0)	4	88 (2.2)	0	
	2023	0		1	90	0		0	

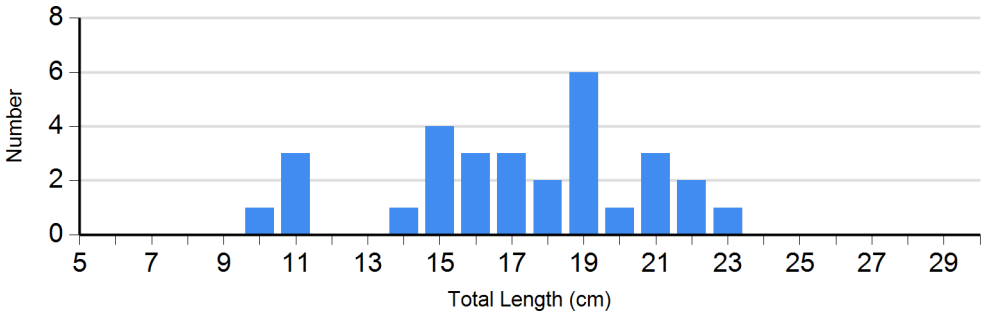
Length Frequency Distribution

Length frequency histogram of species sampled by year.

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

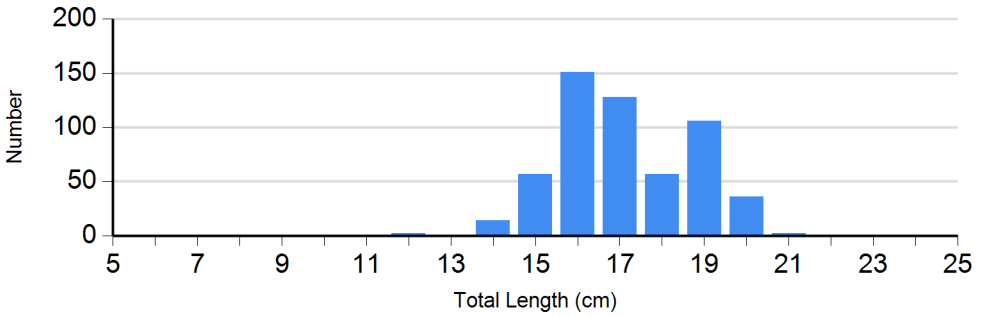


2020

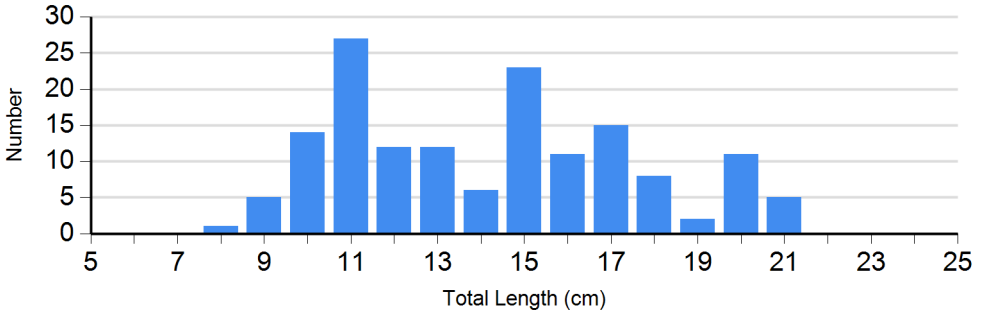


2023

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

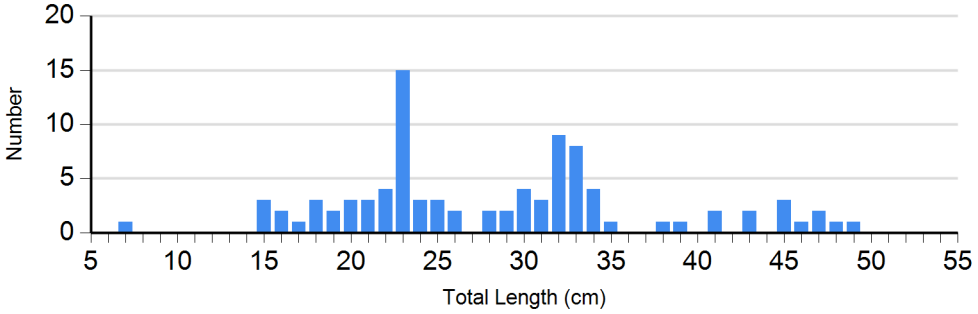


2020

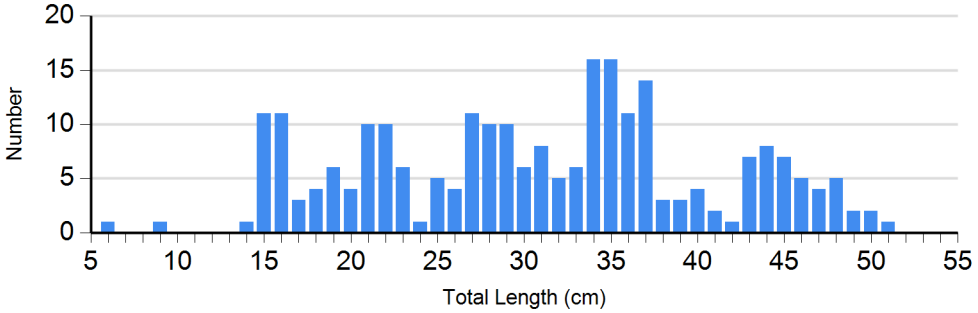


2023

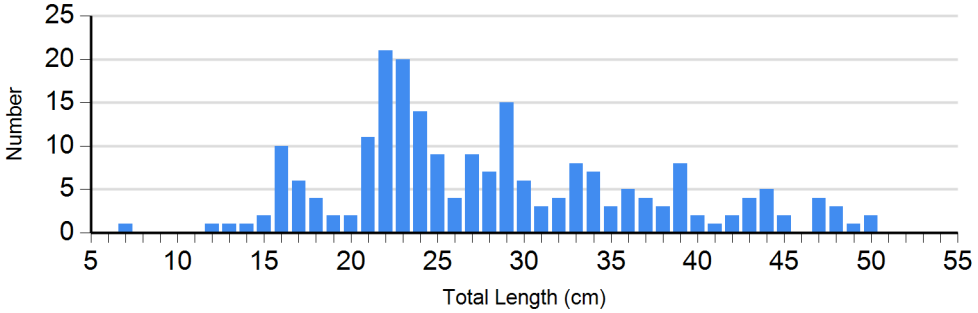
Species: Largemouth Bass
Gear: boat shocker (night)



2018

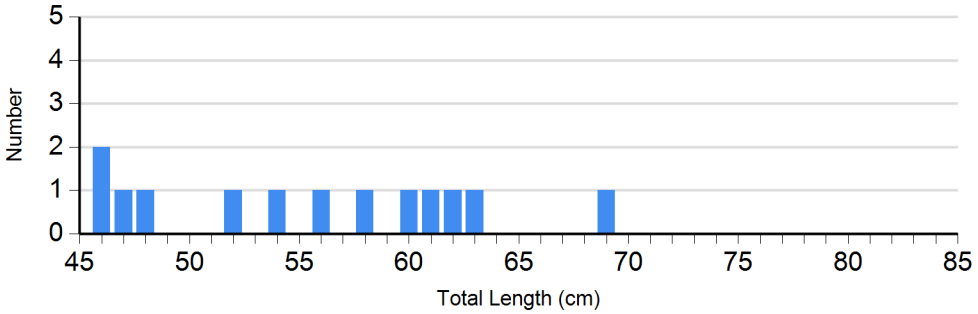


2019



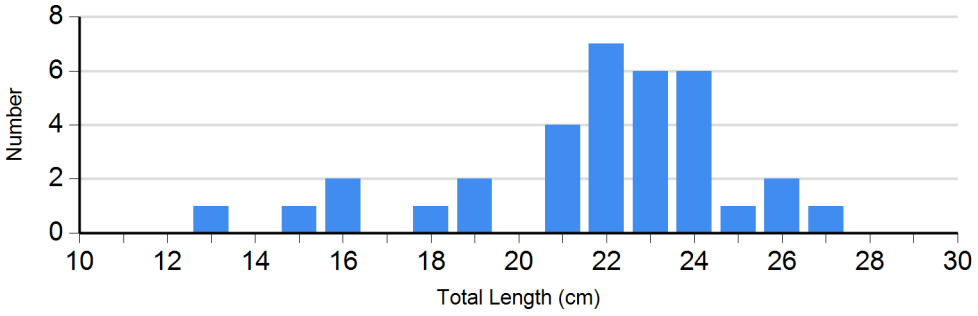
2020

Species: Northern Pike
Gear: AFS std gill net



2020

Species: Yellow Perch
Gear: AFS std gill net

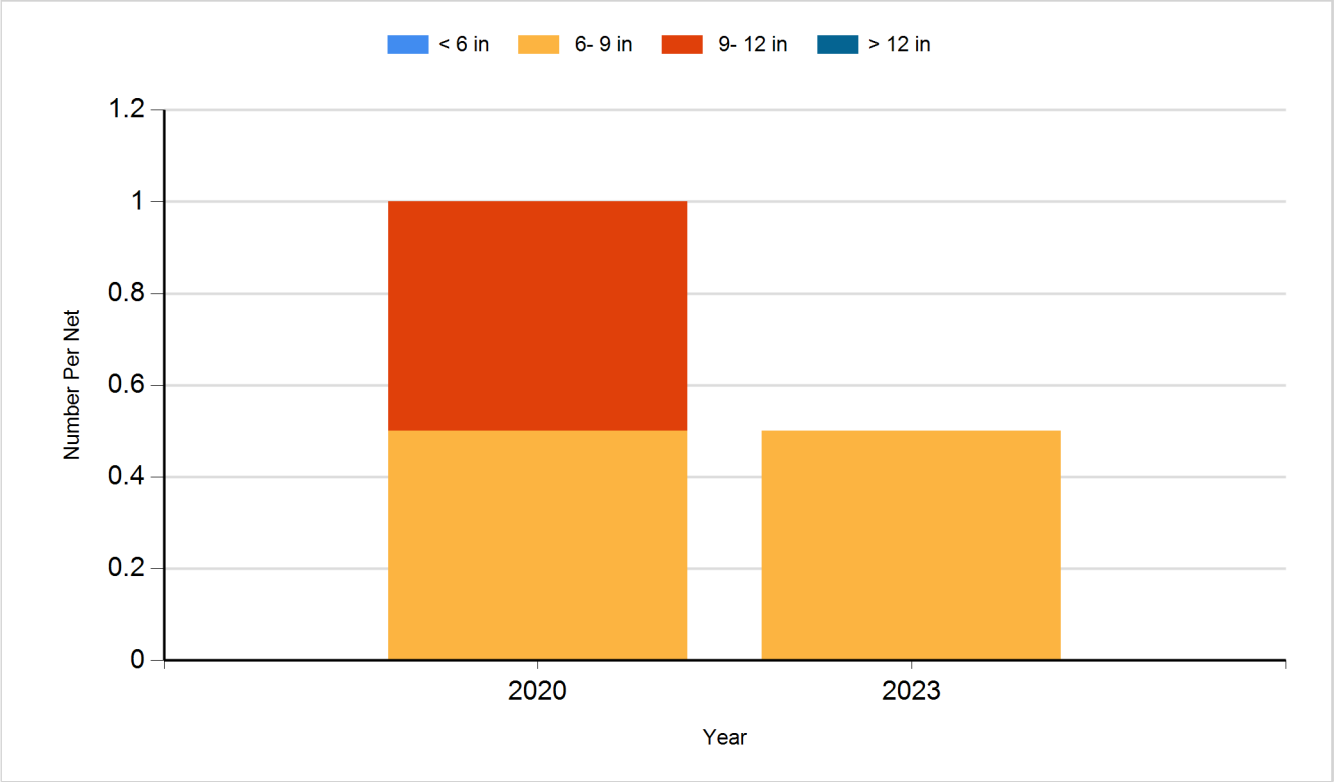


2020

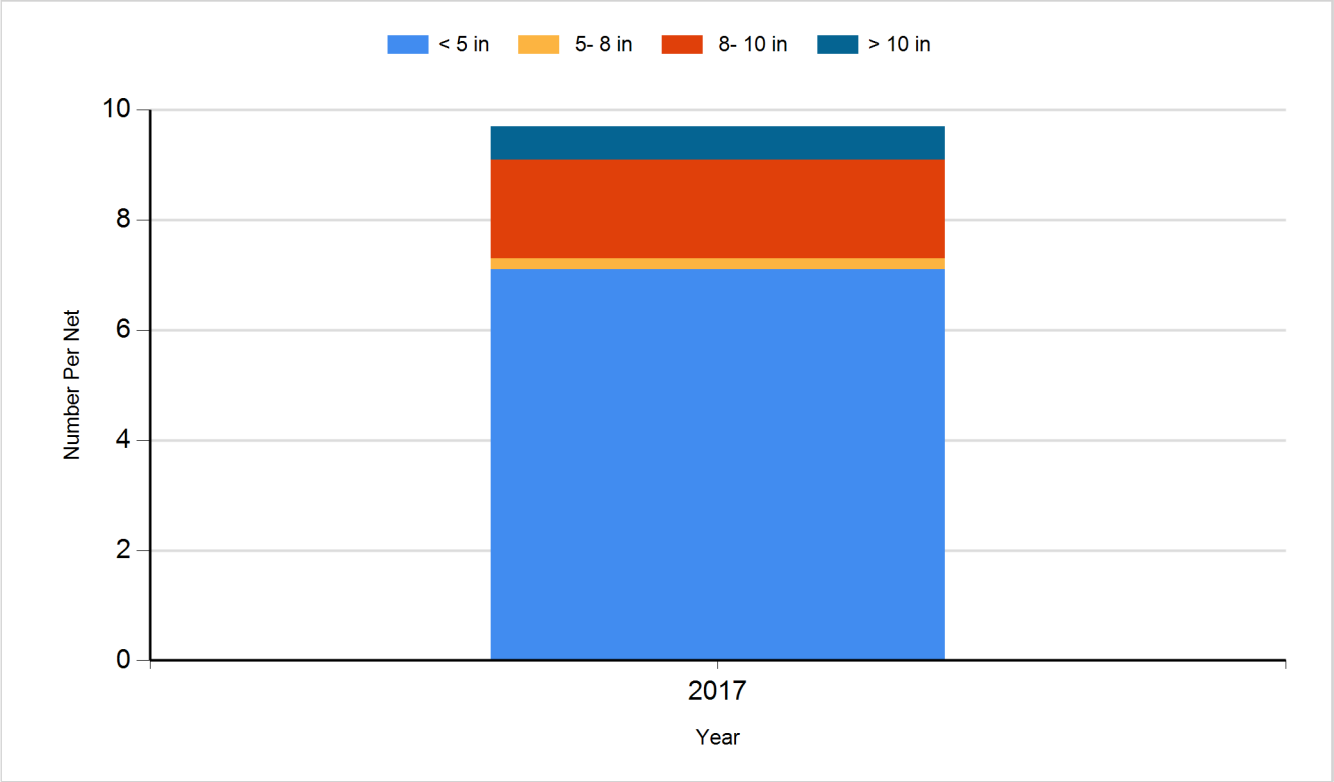
Historic Fish Sizes and Relative Abundance

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

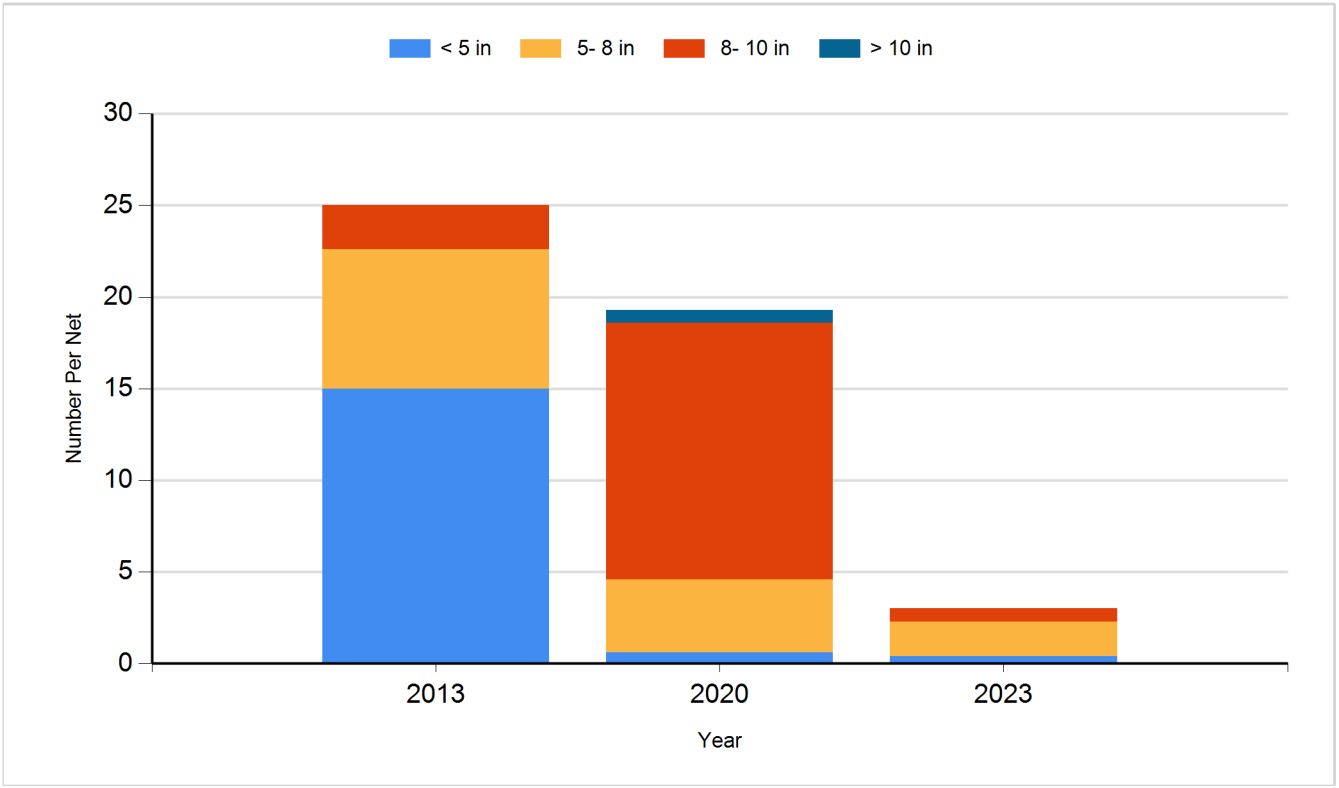
Species: Black Bullhead
Gear: AFS std gill net



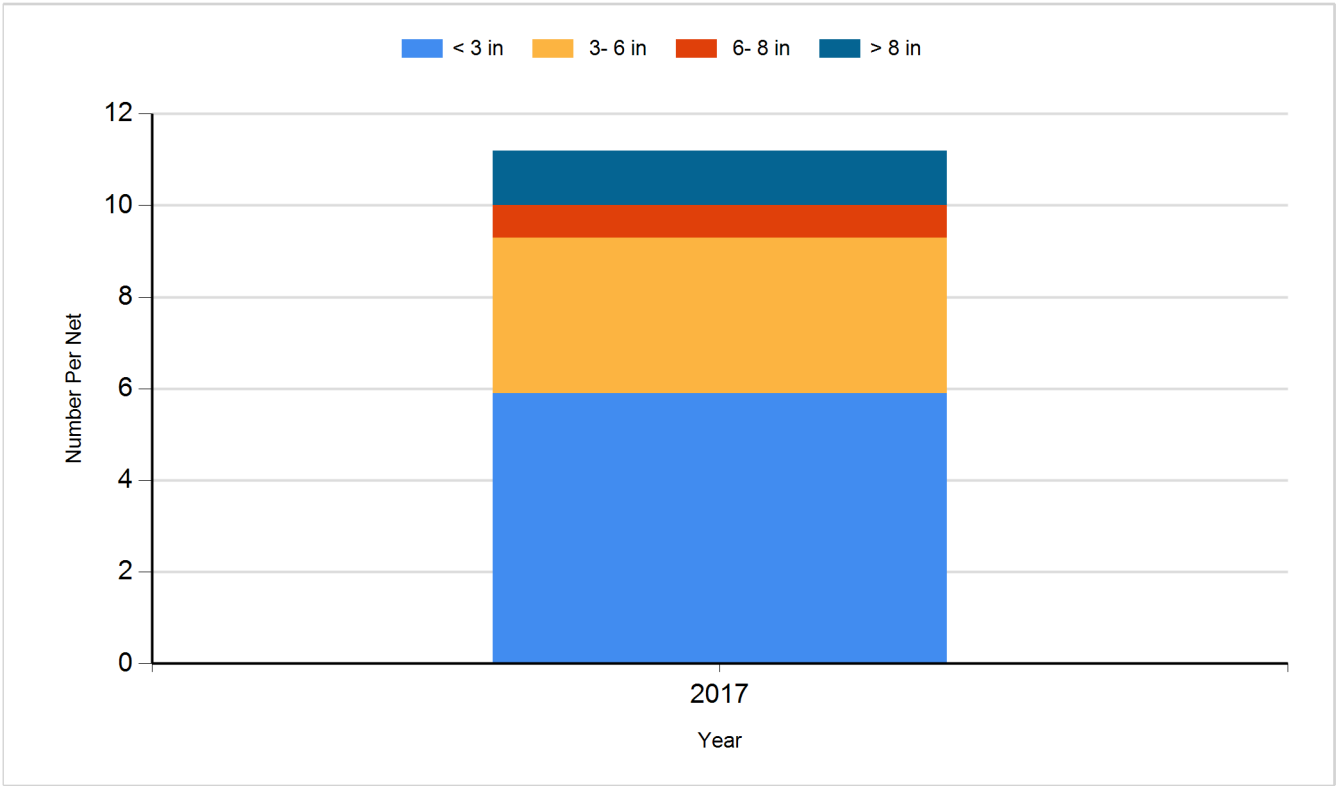
Species: Black Crappie
Gear: AFS std frame net



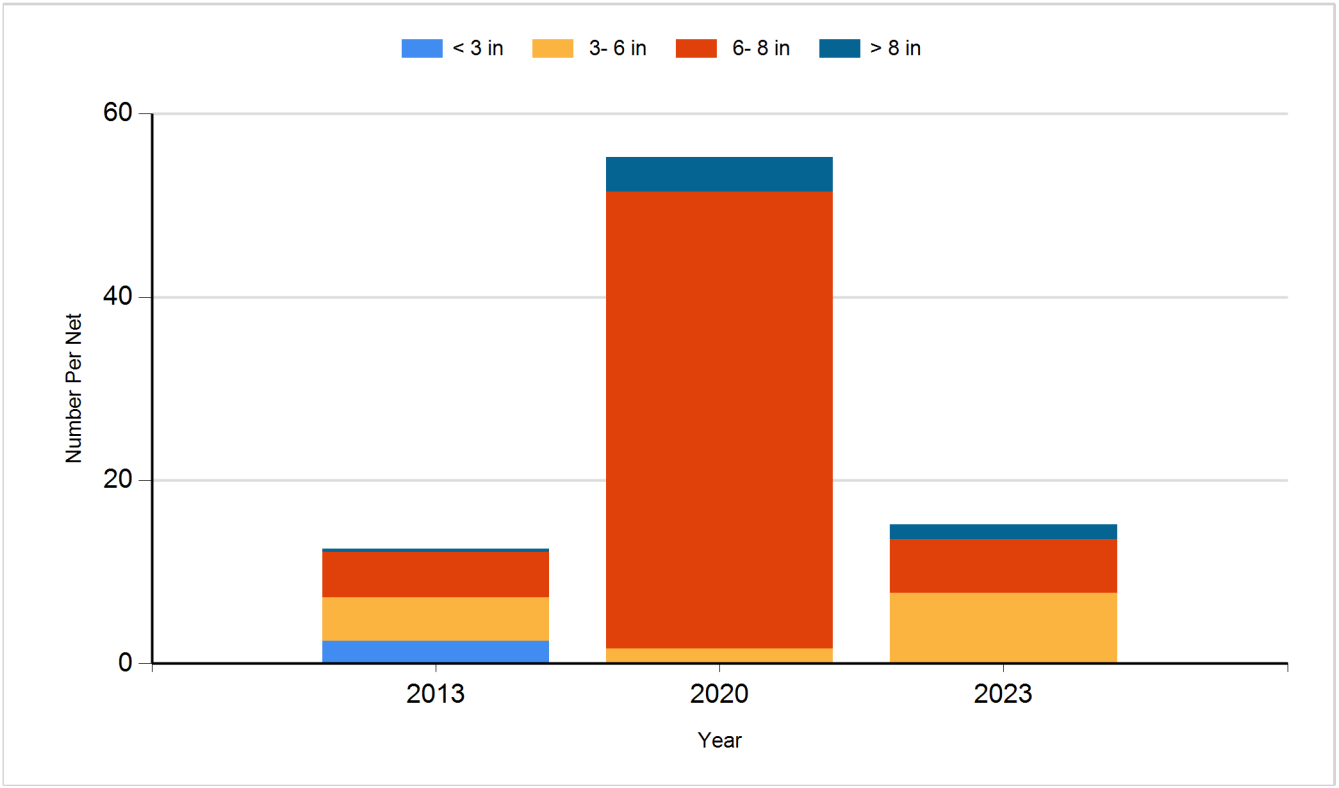
Species: Black Crappie
Gear: frame net (std 3/4 in)



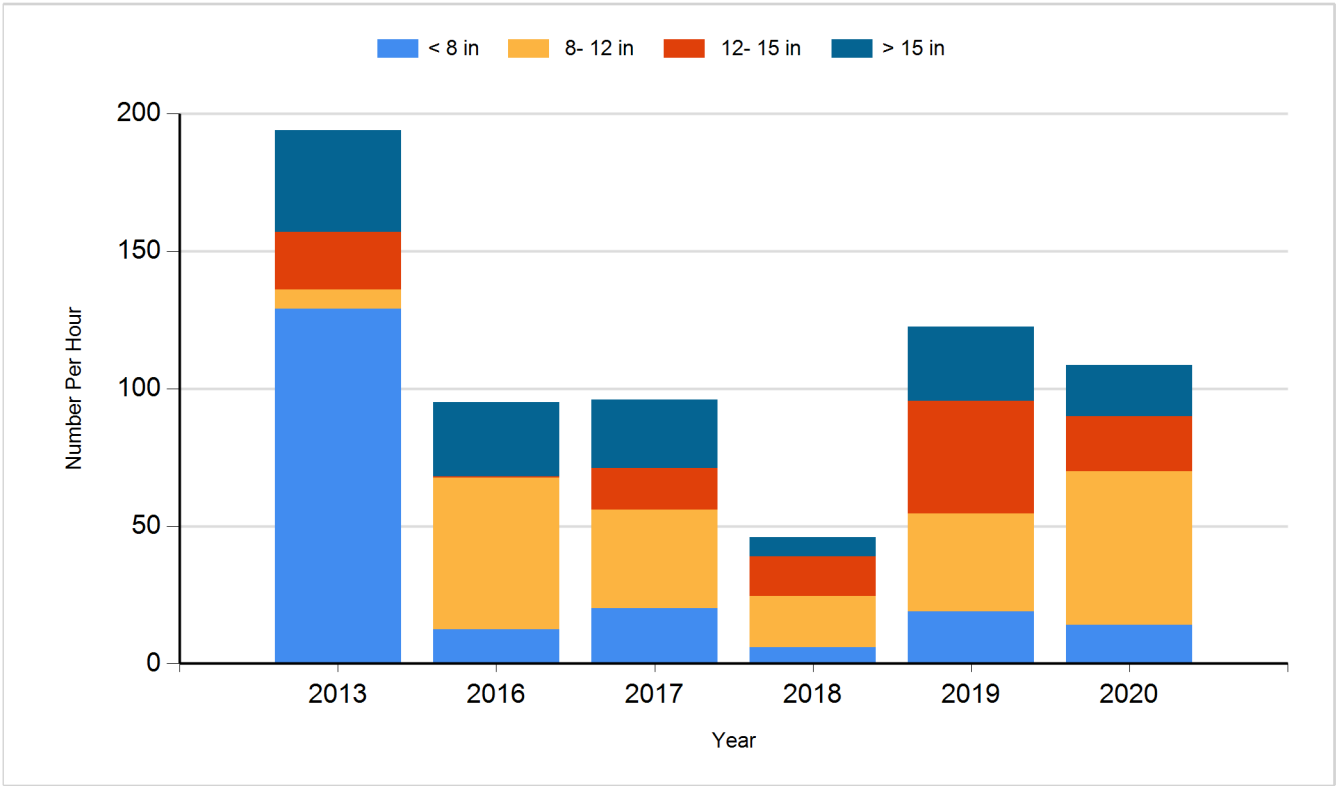
Species: Bluegill
Gear: AFS std frame net



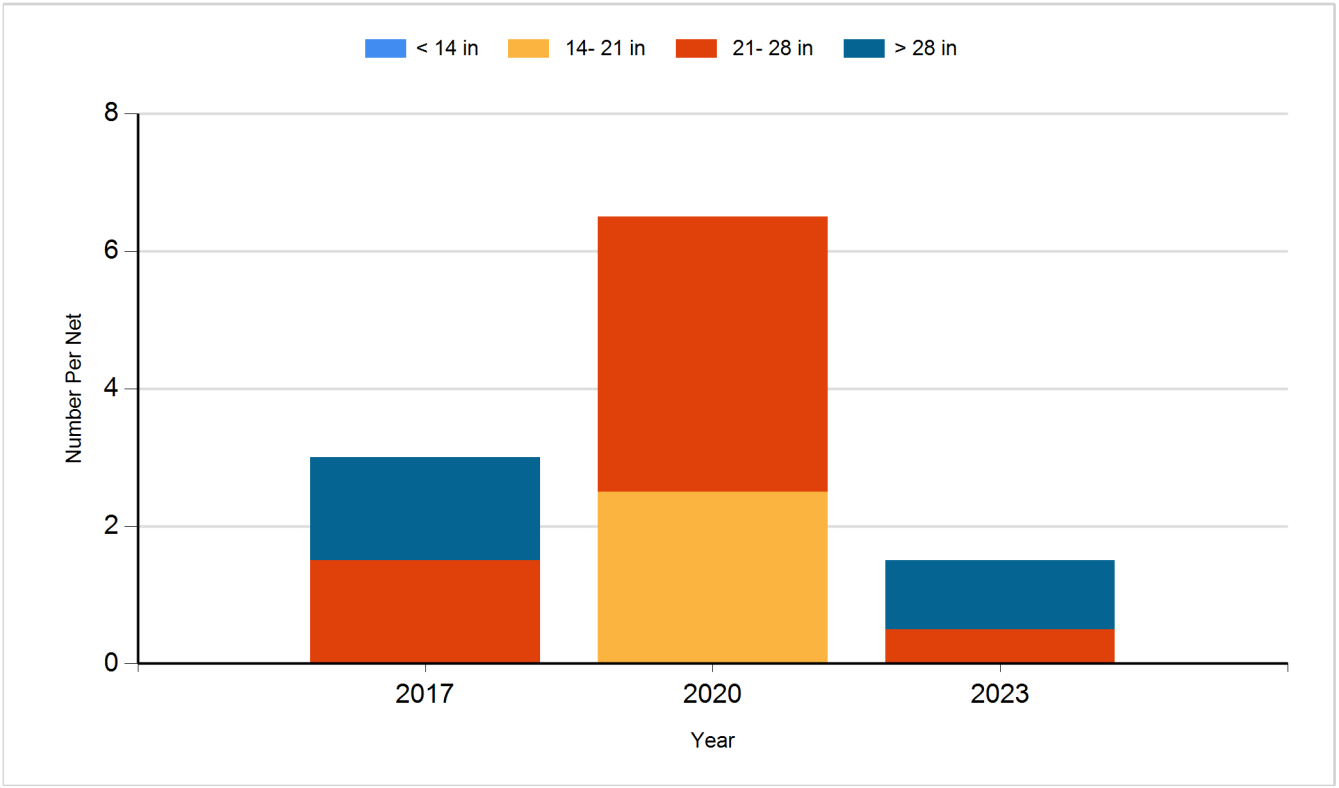
Species: Bluegill
Gear: frame net (std 3/4 in)



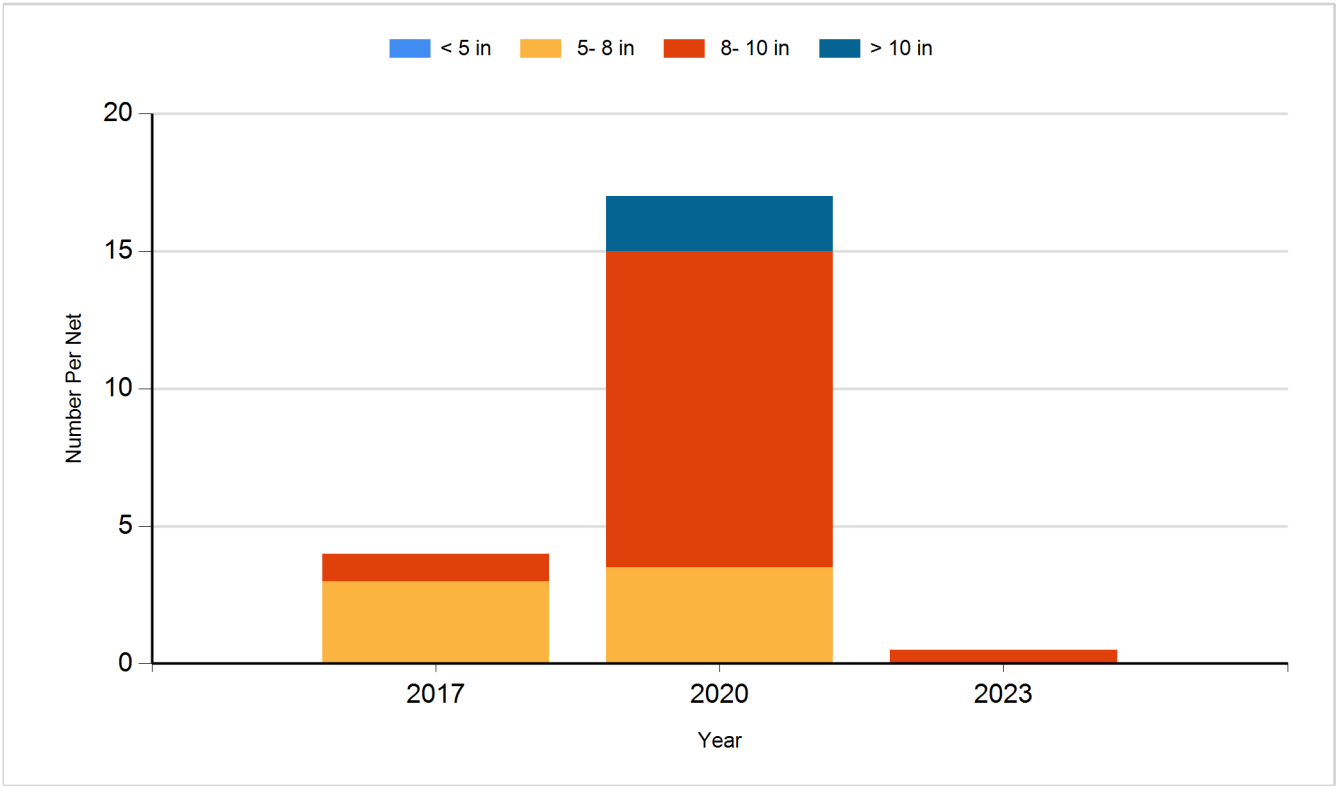
Species: Largemouth Bass
Gear: boat shocker (night)



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
2013	Walleye	Large Fingerling	2,356
2015	Walleye	Large Fingerling	540
2019	Walleye	Small Fingerling	5,845
2023	Saugeye	Juvenile	11,220