Lake Marindahl Survey Summary

Lake Marindahl, located 4 miles west and 3 miles south of Irene, SD, is managed as a bluegill, largemouth bass, and walleye fishery; other fish species (e.g., black crappie, channel catfish, saugeye, and yellow perch) are also present.

- **Black crappie**. Sampling efforts produced 60.7 black crappie per frame net in 2023, resulting in the highest catch rate in the southeast region. Relative abundance was well below the previous sample year, however (217.0 fish per net in 2021). A large fish kill documented late in the summer of 2021 is likely responsible for the drop in catches. Sampled fish ranged in length from 6.3 to 10.2 inches with most (84%) measuring >8 inches. Very few (2%) measured >10 inches, though. A mean relative weight score of 92 indicates that sampled fish were in good condition. Despite the drop in catches this year, Lake Marindahl remains a great option for anglers targeting black crappie.

- **Bluegill.** Frame netting efforts sampled very few bluegills in 2023 (0.3 fish per net). Relative abundance was lower than the previous sample year (4.8 fish per net in 2021) and the long term mean (10.0 fish per net). Like black crappie, the drop in bluegill catches is likely due to a fish kill occurring in 2021. Sampled fish ranged from 5.7 to 6.3 inches in length. Although no data was taken, additional sampling in the fall of 2023 detected good numbers of juvenile bluegill in the system.

- **Channel Catfish**. Channel catfish abundance remained high in 2023 (6.7 fish per gill net), resulting in the second highest catch rate in the region. Relative abundance was a bit below the previous sample year (7.0 fish per net in 2021) but well above the long term mean (3.9 fish per net). Netted fish ranged from 9.8 to 20.5 inches in length with a small proportion (15%) measuring >16 inches. These fish should provide great angling opportunity in future years as they age.

- **Walleye.** Walleye abundance remained low in 2023 (0.3 fish per gill net) despite repeated stocking attempts in recent years. Catches have not risen above 0.8 fish per net since a renewed stocking effort began (walleyes stocked in 2017, 2019, and 2022). Fisheries personnel decided to introduce saugeye into Lake Marindahl in 2022 in an attempt to increase catch rates. Recent research has shown that these walleye/sauger hybrids tend to be more tolerant of the marginal water conditions present in some small impoundments.

For more detailed results see the computer-generated South Dakota Statewide Fisheries Survey for Marindahl Lake (below).

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Marindahl, Yankton County
VER-Lake-276-000
2023

Lake Information

Name: Marindahl

County: Yankton

Legal Description: T95N-R54W-Sec. 7, 17, 18, 20

Surface Area: 147 Acres

Maximum Depth: 30 Feet

Mean Depth: 13 Feet

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	May 30, 2023	3 net-nights
frame net (std 3/4 in)	May 30, 2023	6 net-nights

Common Fish Species Present

Bluegill

Black Crappie

Largemouth Bass

White Sucker

Channel Catfish

Common Carp

Black Bullhead

Yellow Perch

Green Sunfish

Walleye

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	4	1.3	0.6	0		0			
	Black Crappie	3	1.0	0.0	100		0		91	9
	Channel Catfish	21	6.7	2.7	15		0		85	4
	Common Carp	7	1.3	1.7	100		25			
	Walleye	1	0.3	0.6	100		0		85	
	White Sucker	20	6.7	4.4	100		95			
	Yellow Perch	2	0.7	0.6	0		0		103	12
frame net (std 3/4 in)	Black Bullhead	5	0.8	1.0	20		0			
	Black Crappie	368	61.2	29.3	84	3	3	1	92	1
	Bluegill	2	0.3	0.5	50		0			
	Channel Catfish	1	0.2	0.2	0		0		81	
	Green Sunfish	3	0.5	0.7	0		0			
	White Sucker	23	3.8	3.0	100		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**

		CPUE									
Gear	Species	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Avg
AFS std frame net	Black Bullhead				41.8							41.80
	Black Crappie				68.0							68.00
	Common Carp				0.0							0.00
	White Sucker				5.6							5.60
	Yellow Perch				0.2							0.20
AFS std gill net	Black Bullhead				12.0	0.7	0.3		0.2		1.3	2.90
	Black Crappie				2.8	0.7	0.3		3.8		1.0	1.72
	Bluegill				0.2	0.0	0.0		0.0		0.0	0.04
	Channel Catfish				3.8	0.7	1.3		6.8		6.7	3.86
	Common Carp				1.2	2.0	0.0		3.4		1.3	1.58
	Gizzard Shad				3.3	0.0	0.0		0.0		0.0	0.66
	Northern Pike				0.0	0.0	0.0		0.2		0.0	0.04
	Smallmouth Bass				0.3	0.0	0.0		0.0		0.0	0.06
	Walleye				0.0	0.0	0.0		0.8		0.3	0.22
	White Sucker				5.0	0.3	1.0		11.8		6.7	4.96
	Yellow Perch				4.2	3.0	0.0		4.2		0.7	2.42
boat shocker (night)	Largemouth Bass	8.1	7.5	6.0								7.20
	Smallmouth Bass	0.0	0.5	0.0								0.17
frame net (std 3/4 in)	Black Bullhead	52.1	185.2	51.3		16.0	17.2		0.0		0.8	46.09
	Black Crappie	5.6	19.0	49.4		68.2	42.2		217.2		61.2	66.11
	Bluegill	4.7	21.9	17.9		0.2	20.0		4.8		0.3	9.97
	Channel Catfish	0.5	1.3	0.6		0.4	1.4		0.0		0.2	0.63
	Common Carp	1.4	0.1	0.6		1.4	2.6		0.0		0.0	0.87
	Green Sunfish	0.3	1.2	1.2		0.0	4.8		3.0		0.5	1.57
	Largemouth Bass	0.0	0.0	0.0		0.2	0.0		0.0		0.0	0.03
	Sunfish Hybrid	0.0	0.0	0.0		0.0	0.0		1.6		0.0	0.23
	Walleye	0.0	0.0	0.0		0.0	0.0		0.2		0.0	0.03
	White Sucker	5.5	19.8	12.6		3.8	12.0		26.4		3.8	11.99
	Yellow Perch	0.0	0.0	0.0		1.0	0.2		0.6		0.0	0.26

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 Bullhead	PSD				13						
		PSD-P				1						
	Black Crappie	PSD				94						
		PSD-P				4						
		Wr				94						
	Common Carp	PSD				0						
		PSD-P				0						
	White Sucker	PSD				96						
		PSD-P				64						
	Yellow Perch	PSD				100						
		PSD-P				100						
		Wr				75						
AFS std gill net	Black Bullhead	PSD				18	0	0		100		0
		PSD-P				1	0	0		0		0
		Wr					89					
	Black Crappie	PSD				94	100	0		16		100
		PSD-P				0	100	0		0		0
		Wr				96	97	73		129		91
	Bluegill	PSD				0						
		PSD-P				0						
		Wr				85						
	Channel Catfish	PSD				91	50	75		38		15
		PSD-P				9	0	25		0		0
		Wr				103	95	114		85		85
	Common Carp	PSD				0	0	0		47		100
		PSD-P				0	0	0		18		25
	Walleye	PSD					0			25		100
		PSD-P					0			25		0
		Wr								92		85
	White Sucker	PSD				90	100	67		100		100
		PSD-P				63	0	67		66		95
	Yellow Perch	PSD				96	0			62		0
		PSD-P				80	0			0		0

			Year									
Gear	Species	Index	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
AFS std gill net	Yellow Perch	Wr				82	88			91		103
boat shocker (night)	Largemouth Bass	PSD	100	13	58							
		PSD-P	100	13	17							
		Wr	105	98	95							
frame net (std 3/4 in)	Black Bullhead	PSD	2	1	1		5	22				20
		PSD-P	1	0	0		0	0				0
	Black Crappie	PSD	98	2	9		67	37		78		84
		PSD-P	0	1	7		63	36		4		3
		Wr	104	115	99		98	100		109		92
	Bluegill	PSD	32	49	61		0	77		96		50
		PSD-P	2	1	1		0	0		4		0
		Wr	109	93	95			102		102		
	Channel Catfish	PSD	20	31	50		0	14				0
		PSD-P	0	8	0		0	0				0
		Wr	82	78	117		84	95				81
	Common Carp	PSD	0	0	0		0	15				
		PSD-P	0	0	0		0	8				
	Green Sunfish	PSD	67	17	58			17		13		0
		PSD-P	0	0	0			0		0		0
		Wr		91	100			113		105		
	Largemouth Bass	PSD		0			100					
		PSD-P		0			100					
		Wr					99					
	Walleye	PSD								0		
		PSD-P								0		
		Wr								80		
	White Sucker	PSD	100	100	100		100	100		99		100
		PSD-P	98	99	100		68	87		82		96
		Wr					58					
	Yellow Perch	PSD					40	100		100		
		PSD-P					0	0		0		
		Wr					97	88		90		

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+
2021	1053		180 (237)	216 (651)	229 (128)	265 (21)	297 (16)				
2018	229		215 (1)	258 (28)	272 (142)	270 (49)		301 (9)			
2017	340		174 (16)	213 (60)	226 (249)	256 (4)		302 (8)	294 (4)		
2015	191	147 (188)	216 (1)	241 (1)	250 (1)						
2014	56		176 (1)	227 (54)	216 (1)						

Species: Bluegill

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2021	24		154 (5)	183 (19)							
2015	217	118 (107)	162 (52)	171 (50)	181 (9)						
2014	47	136 (29)	152 (5)	168 (8)	189 (3)	198 (2)					

Species: Walleye

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2021	4		255 (3)		575 (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+
2021	21	157 (7)		212 (14)							

Fish Condition

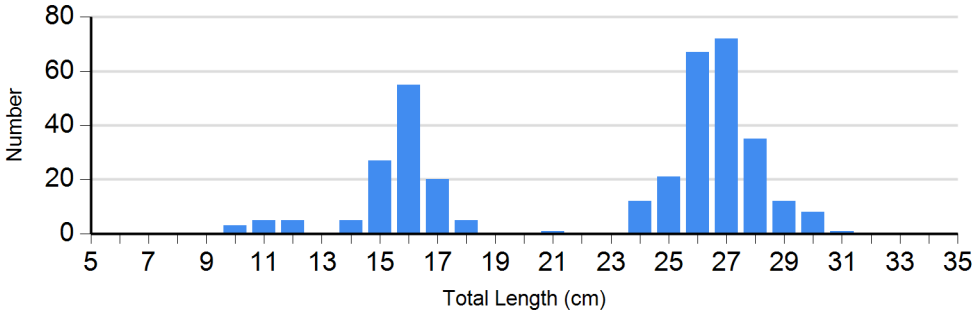
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2019	132	104 (1.4)	4		70	80 (2.4)	5	86
	2021	237	117 (1.2)	802	106 (0.6)	43	86 (1.9)	4	82
	2023	58	120	298	91 (0.8)	10		1	
Bluegill Frame Net	2019	23	106 (3.0)	77	101 (1.7)	0		0	
	2021	1	86	22	102 (1.9)	1	100	0	
Channel Catfish Gill Net	2019	1	99	2	124 (3.0)	1	110	0	
	2021	21	81 (1.0)	13	92 (3.3)	0		0	
	2023	17	85 (3.1)	3	87 (5.6)	0		0	
Walleye Gill Net	2021	3	87 (4.0)	0		1	106	0	
	2023	0		1	85	0		0	
Yellow Perch Gill Net	2021	8	88 (1.5)	13	93 (2.6)	0		0	
	2023	2	103 (9.0)	0		0		0	

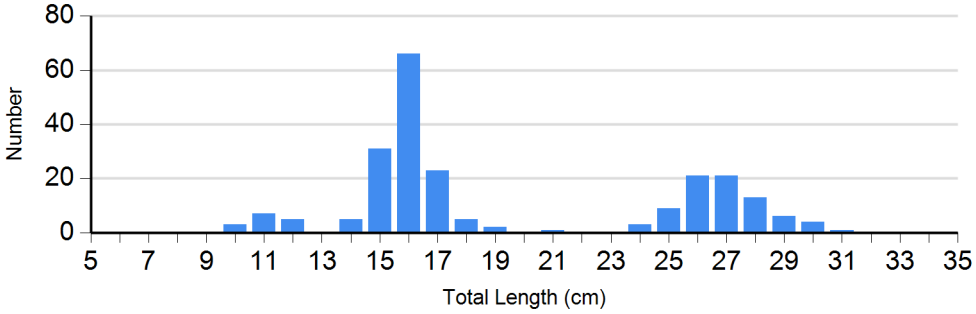
Length Frequency Distribution

Length frequency histogram of species sampled by year.

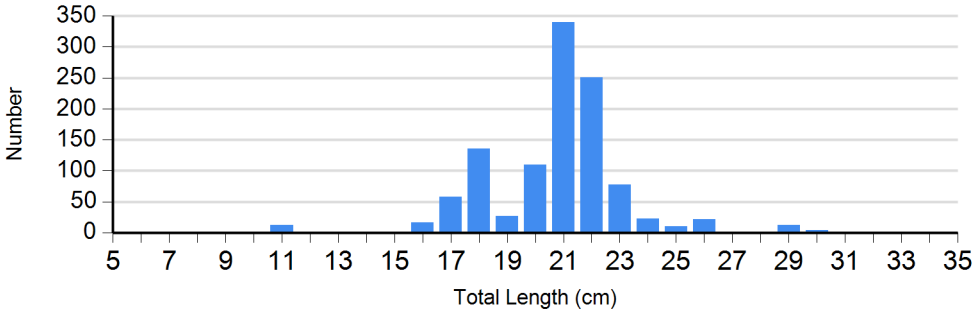
Species: Black Crappie
Gear: frame net (std 3/4 in)



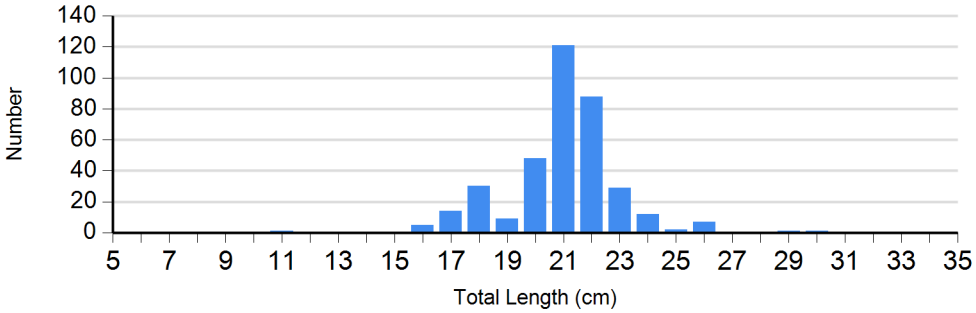
2018



2019

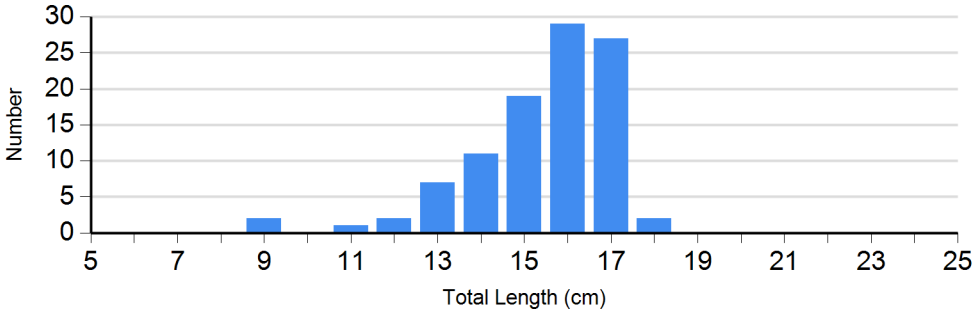


2021

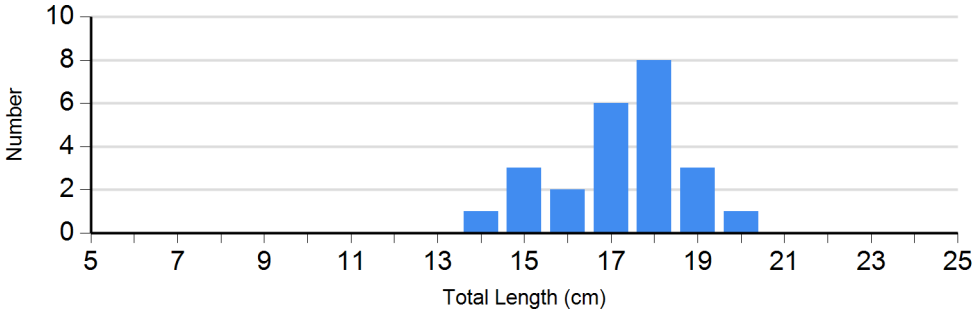


2023

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

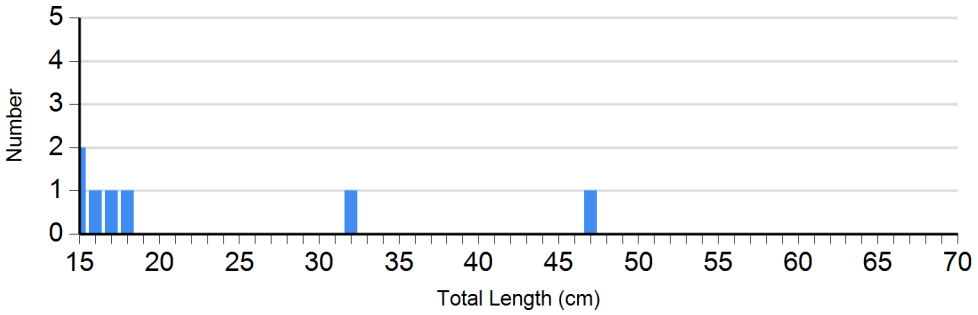


2019

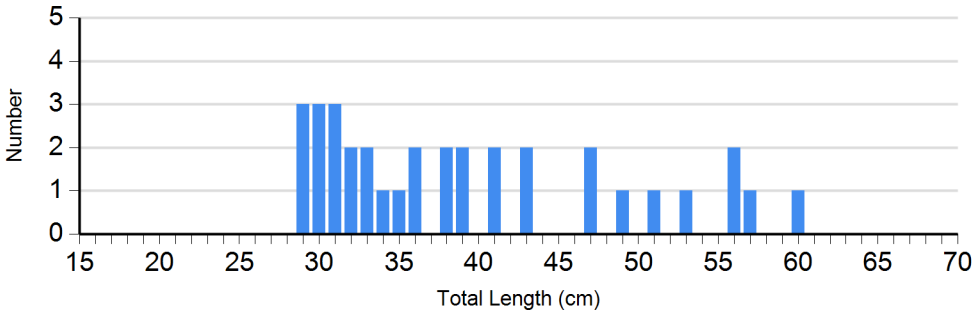


2021

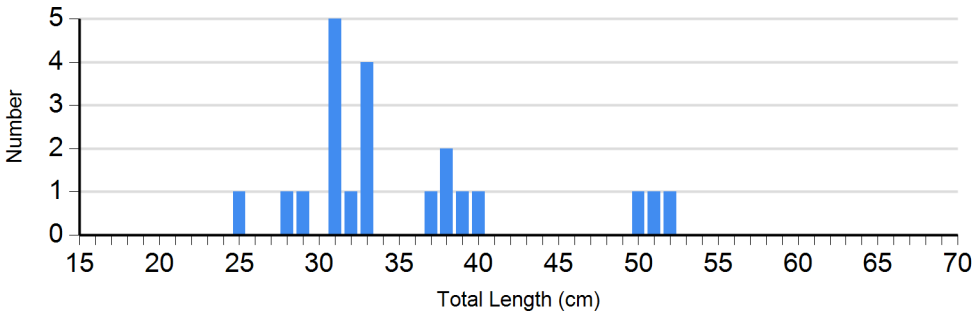
Species: Channel Catfish
Gear: AFS std gill net



2018

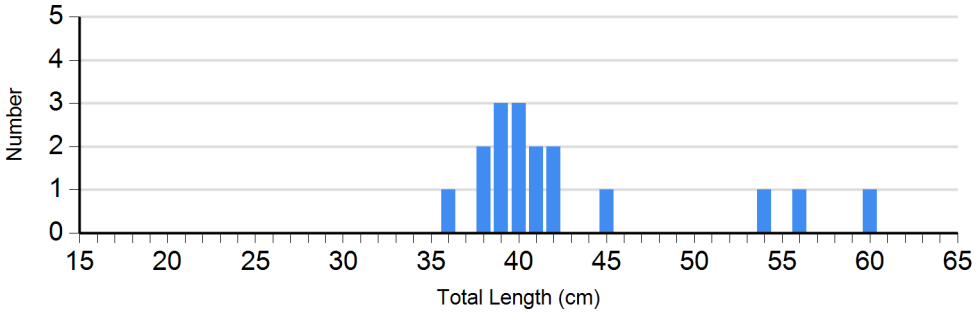


2021



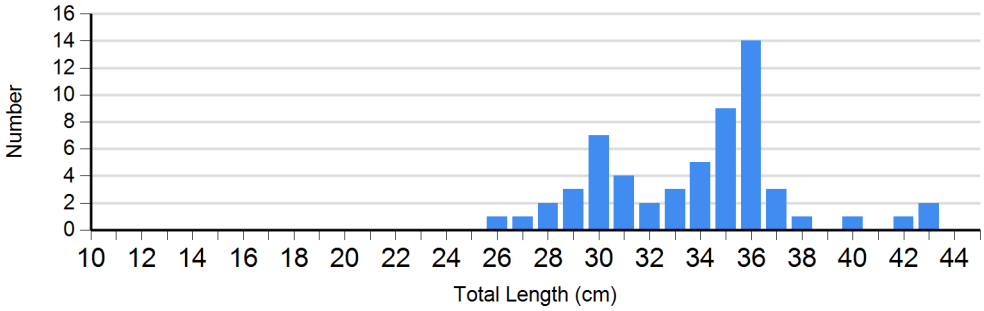
2023

Species: Common Carp
Gear: AFS std gill net

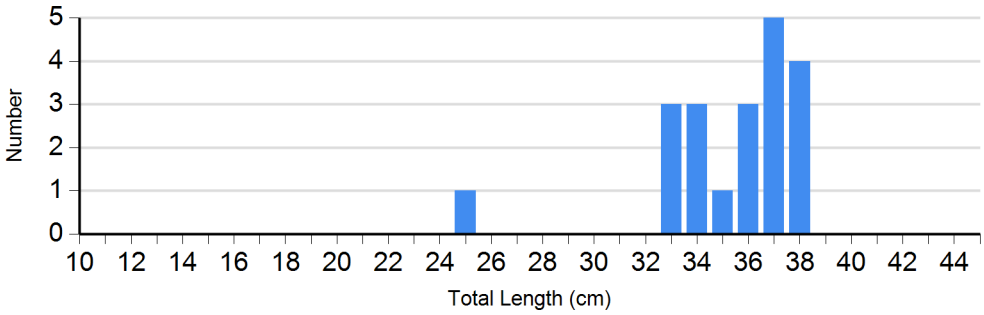


2021

Species: White Sucker
Gear: AFS std gill net

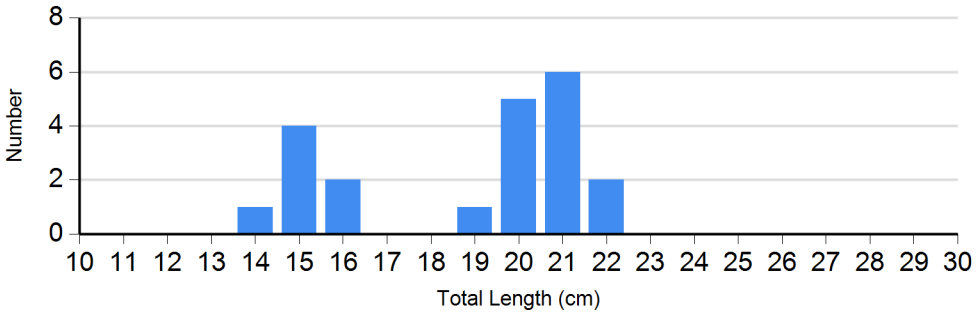


2021



2023

Species: Yellow Perch
Gear: AFS std gill net

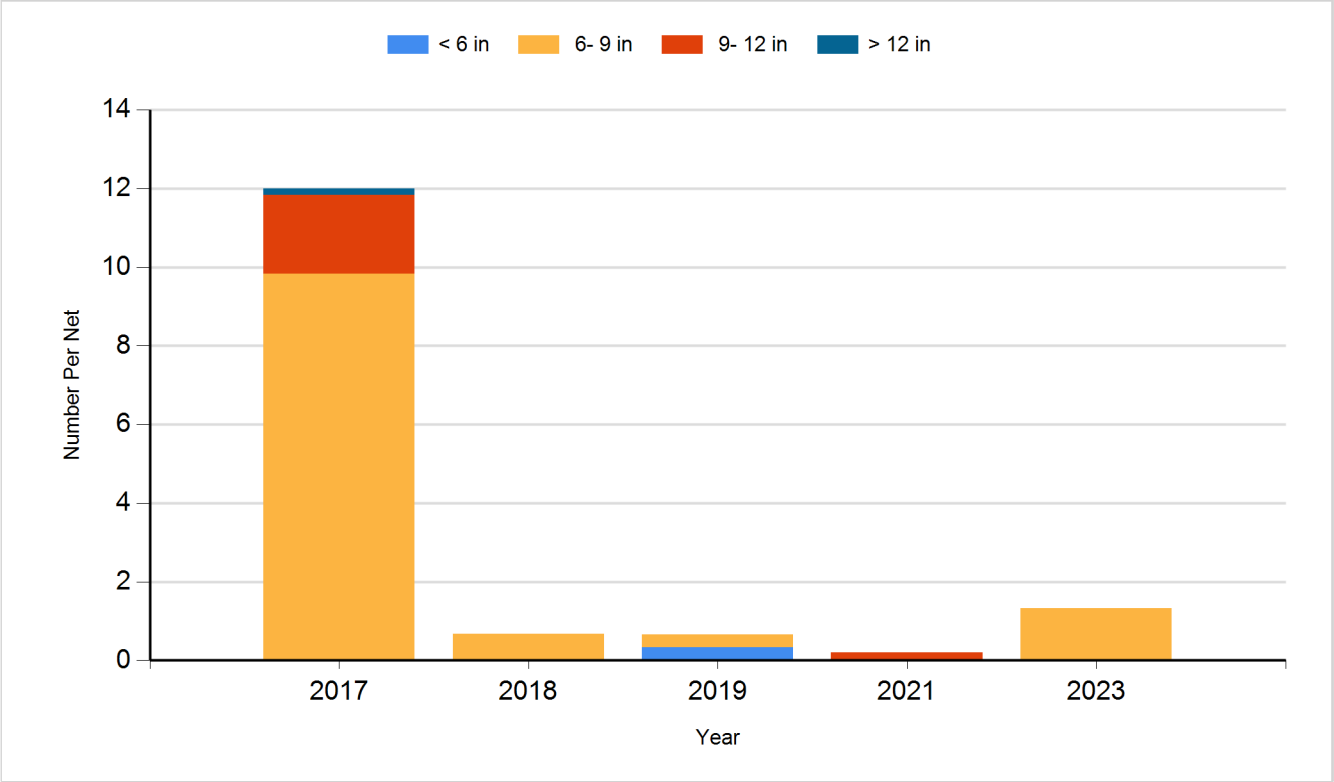


2021

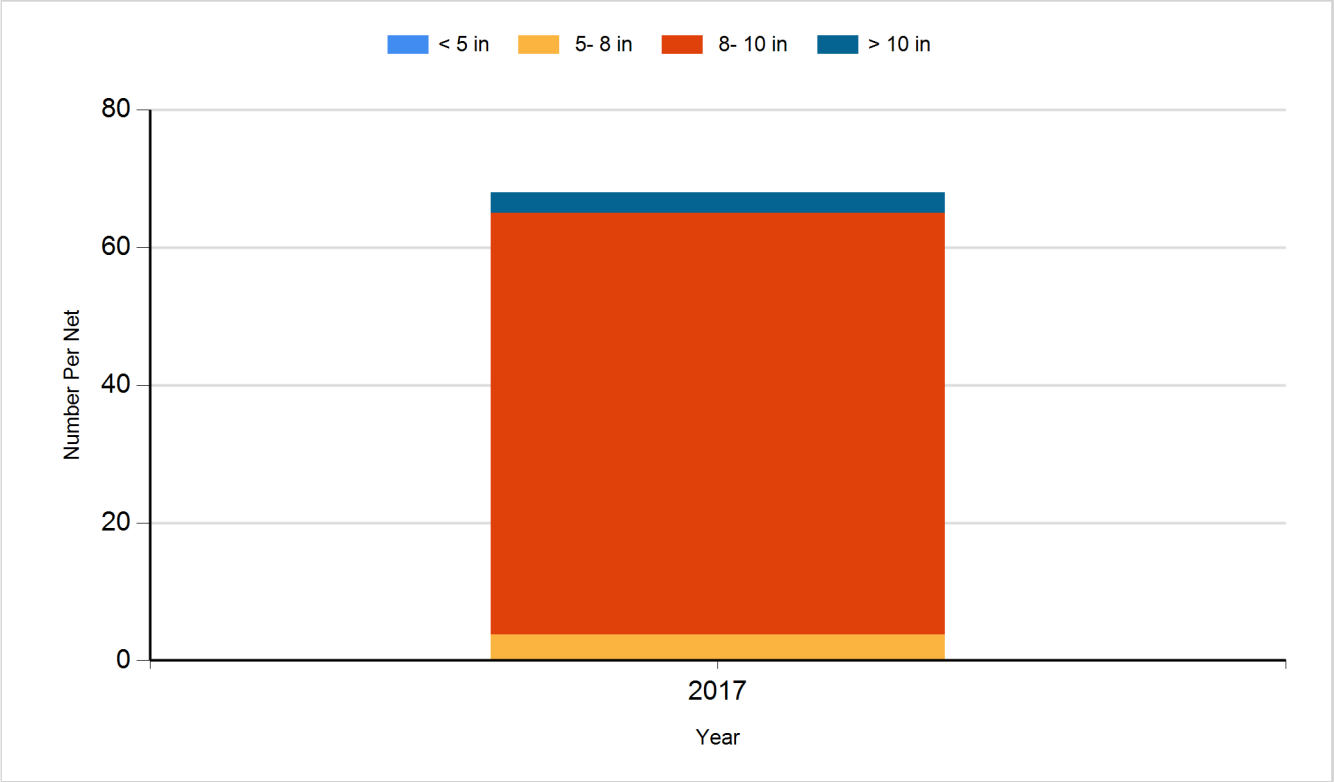
Historic Fish Sizes and Relative Abundance

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

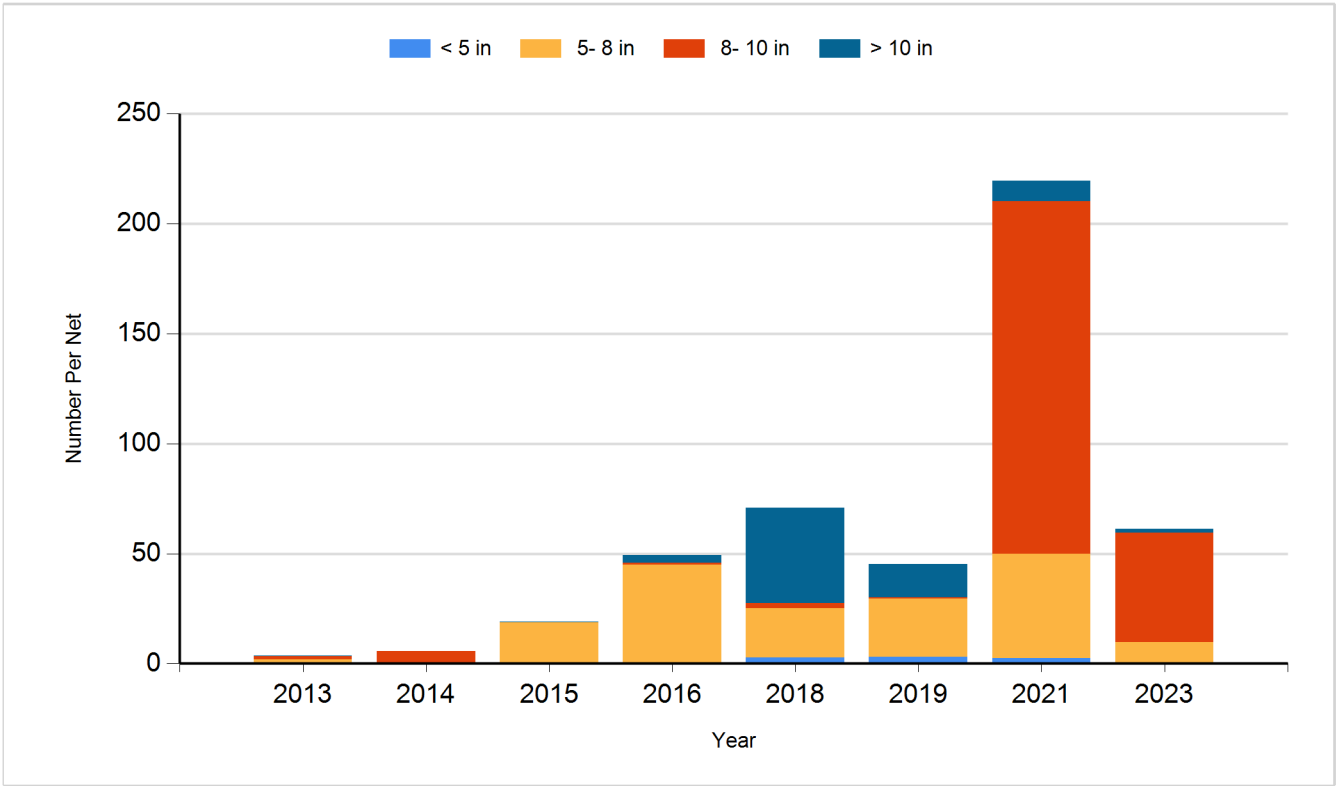
Species: Black Bullhead
Gear: AFS std gill net



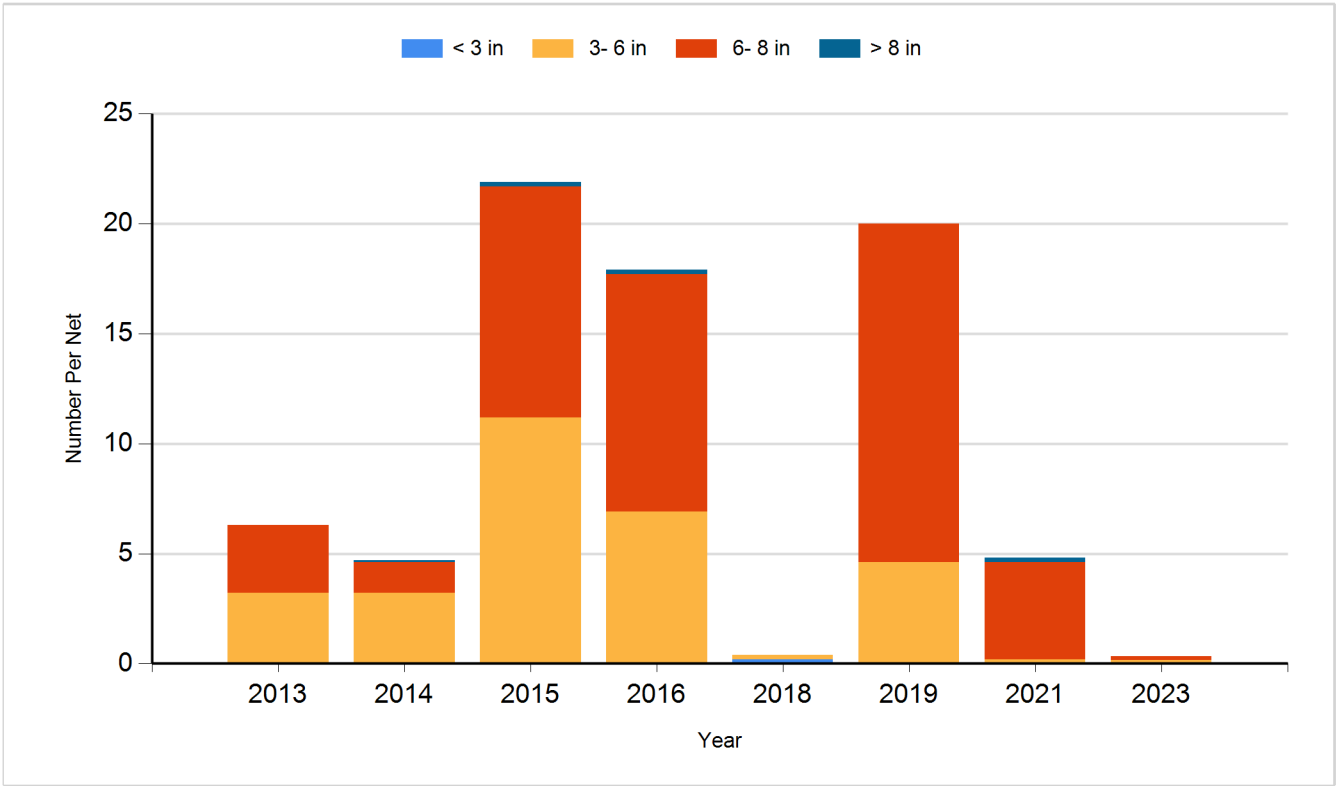
Species: Black Crappie
Gear: AFS std frame net



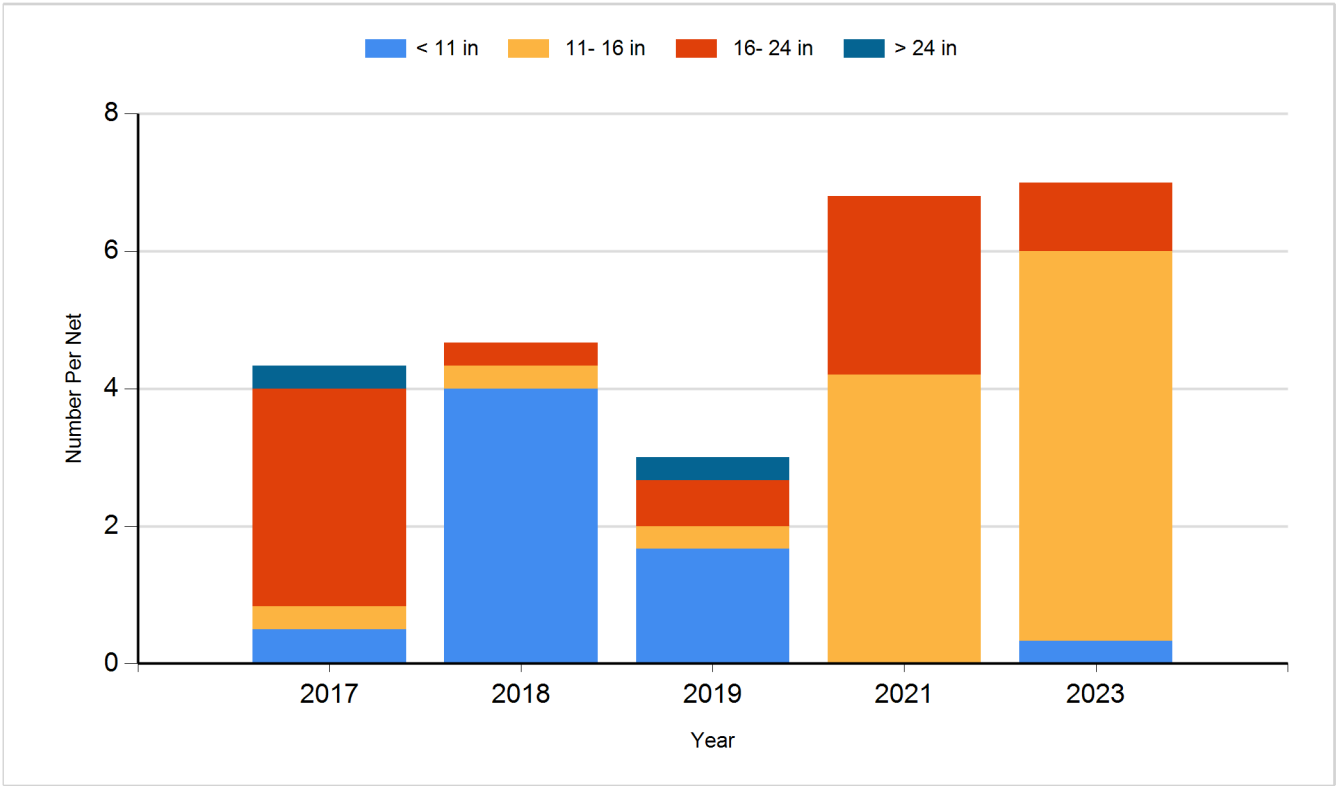
Species: Black Crappie
Gear: frame net (std 3/4 in)



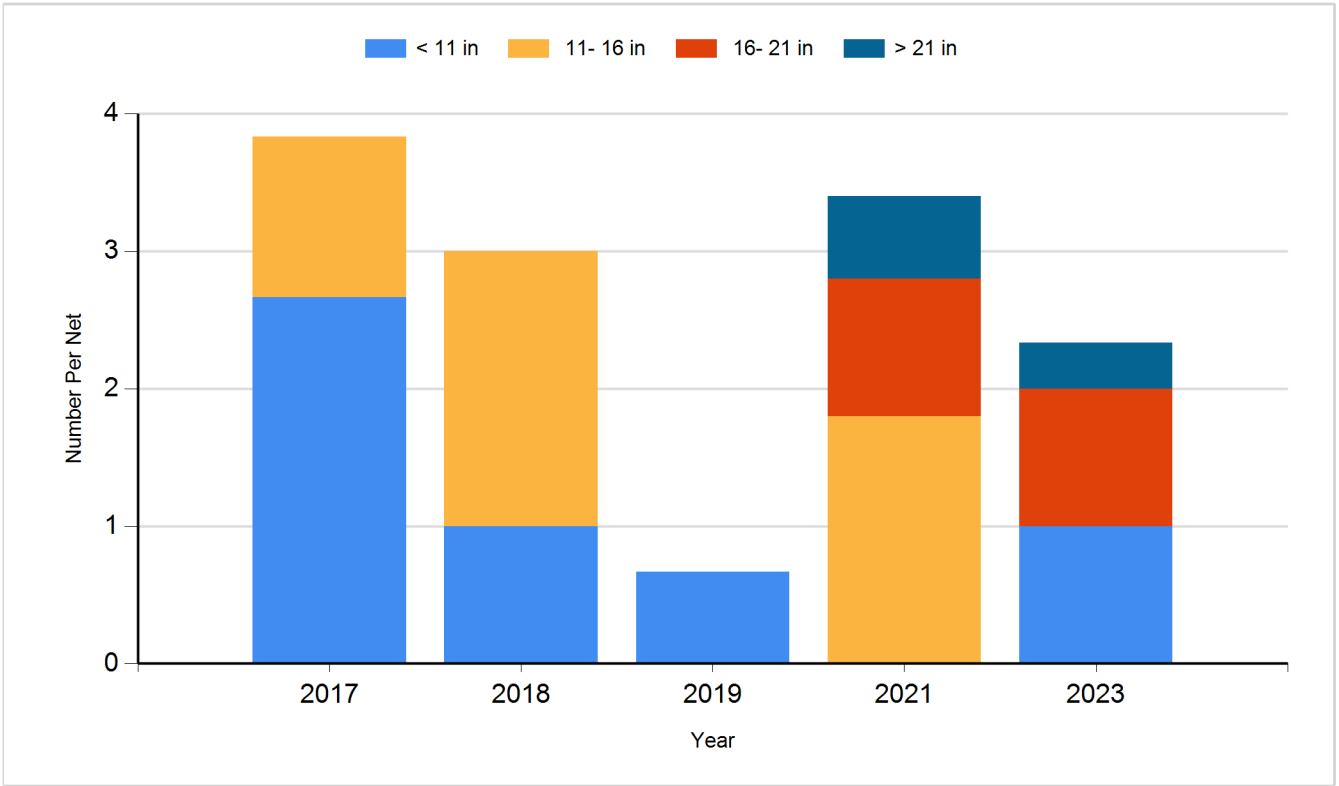
Species: Bluegill
Gear: frame net (std 3/4 in)



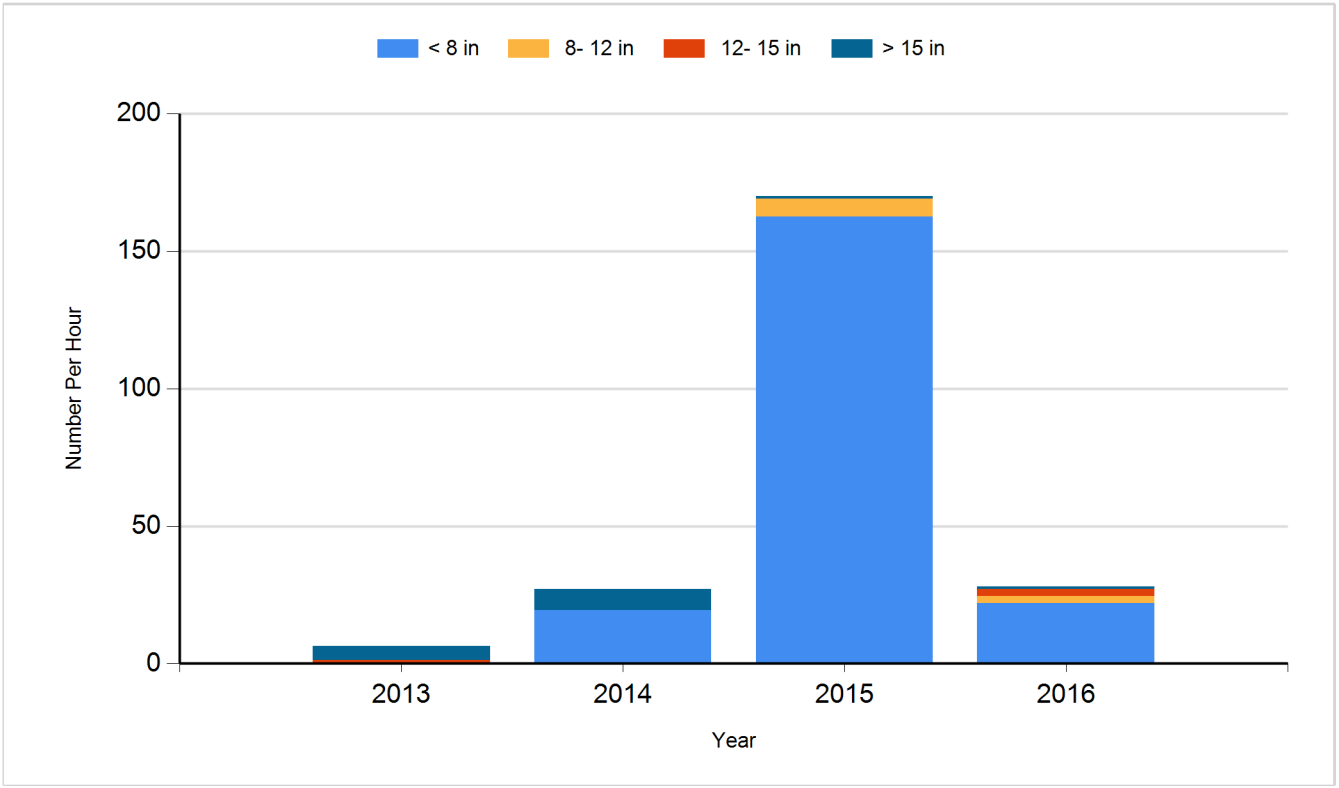
Species: Channel Catfish
Gear: AFS std gill net



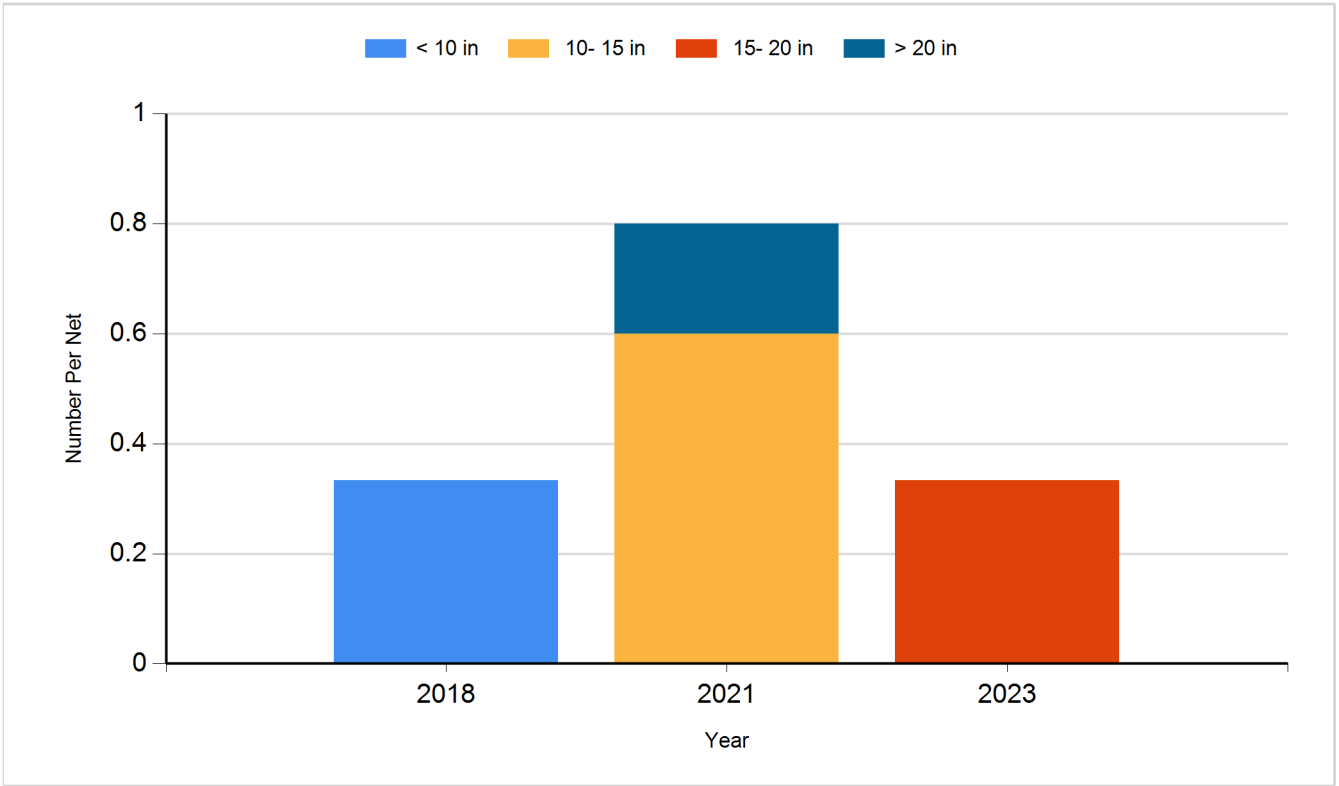
Species: Common Carp
Gear: AFS std gill net



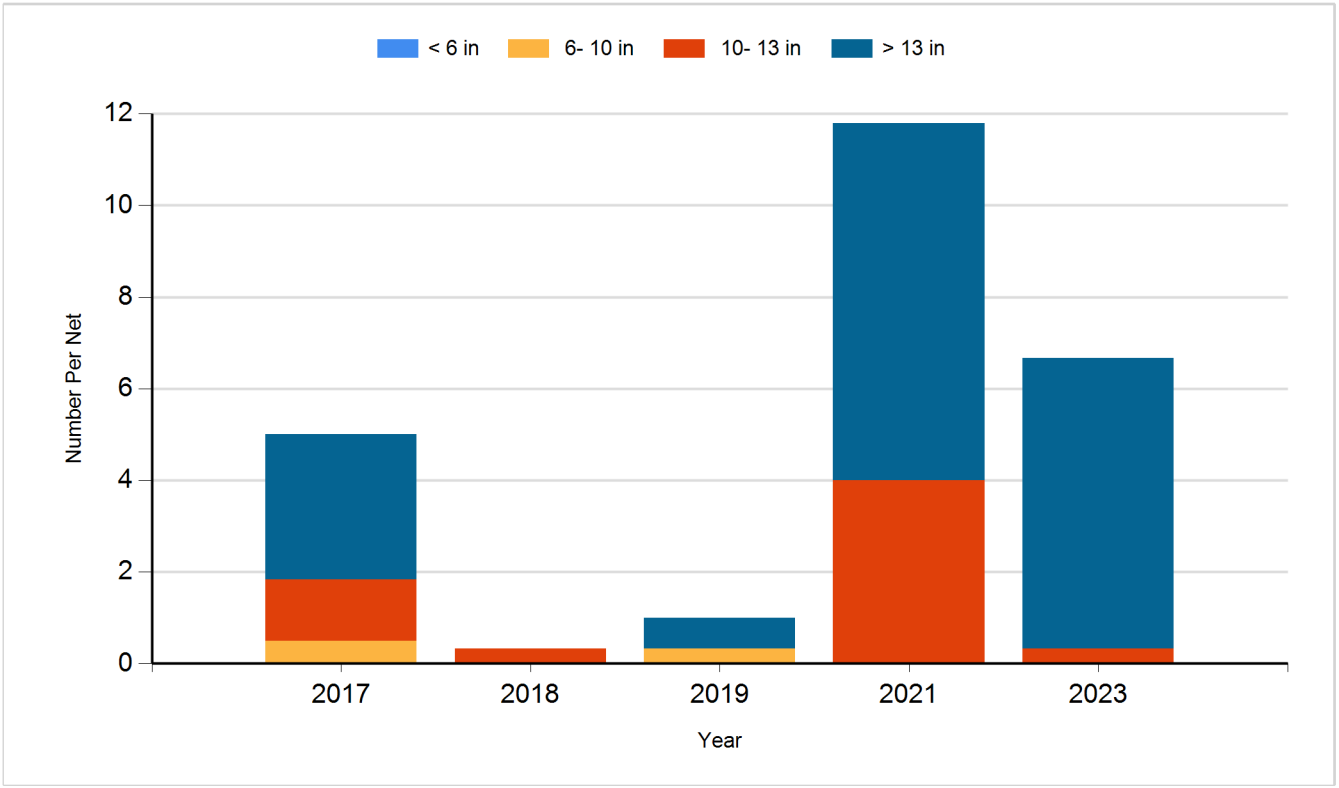
Species: Largemouth Bass
Gear: boat shocker (night)



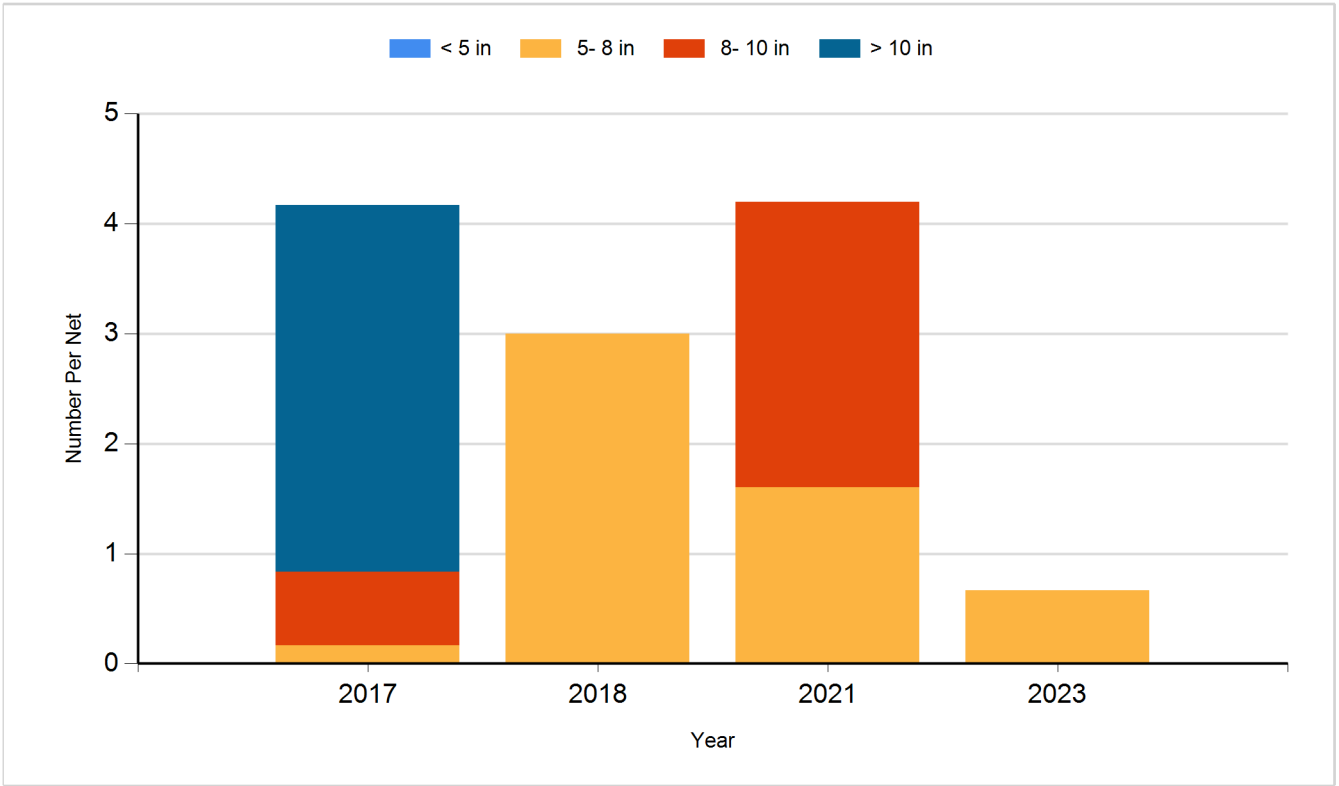
Species: Walleye
Gear: AFS std gill net



Species: White Sucker
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	Largemouth Bass	Large Fingerling	3,104
2013	Rainbow Trout	Fingerling	3,424
2014	Bluegill	Adult	144
2014	Channel Catfish	Adult	3
2015	Gizzard Shad	Adult	74
2015	Largemouth Bass	Juvenile	1,590
2016	Gizzard Shad	Adult	360
2017	Walleye	Fingerling	1,200
2017	Walleye	Juvenile	225
2017	Yellow Perch	Adult	7,437
2018	Gizzard Shad	Adult	
2019	Walleye	Fingerling	818
2019	Walleye	Small Fingerling	10,800
2021	Gizzard Shad	Juvenile	136
2022	Saugeye	Juvenile	17,290
2022	Walleye	Fry	493,000
2023	Walleye	Fry	400,000