

## **New Wall Lake Survey Summary**

New Wall Lake is a 42-acre impoundment located 1.5 miles South and 1.5 miles West of Wall. New Wall is primarily managed as a high-quality Largemouth Bass fishery. Other species present include Bluegill, Black Crappie, Yellow Perch, White Crappie and Northern Pike. Only fall electrofishing was completed to check the status of the bass population.

**Largemouth bass.** New Wall Lake continues to be one of the best bass fisheries in the area with a daytime electrofishing catch rate of 129.0 fish per hour. Fish sizes were also impressive with 60% of the adult bass being over twelve inches, and 33% over fifteen inches. The slot length limit on bass seems to be doing a good job of providing a high-quality bass fishery.

# SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

New Wall, Pennington County

MCE-Lake-9-000

2023

## Lake Information

**Name:** New Wall  
**County:** Pennington  
**Surface Area:** 36 Acres

## Surveys and Investigations

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

Gear	Date	Effort
boat shocker (day)	Sep 25, 2023	2400 seconds

## **Common Fish Species Present**

Yellow Perch

Northern Pike

Largemouth Bass

Bluegill

Black Crappie

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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
boat shocker (day)	Largemouth Bass	102	108.0	35.0	60	8	33	8	115	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	
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023		
AFS std frame net	Black Crappie				13.3								13.30
	Bluegill				15.7								15.70
	Golden Shiner				0.0								0.00
	Yellow Perch				1.4								1.40
AFS std gill net	Black Crappie				5.0		0.5						2.75
	Bluegill				3.0		0.0						1.50
	Golden Shiner				0.0		0.0						0.00
	Largemouth Bass				2.0		0.5						1.25
	Northern Pike				1.5		1.0						1.25
	Yellow Perch				4.5		2.0						3.25
boat shocker (day)	Largemouth Bass								120.0		108.0		114.00
boat shocker (night)	Largemouth Bass	97.2	91.5	107.0	169.5	71.0	82.0	76.0					99.17
frame net (std 3/4 in)	Black Crappie		27.0	8.1		13.2	17.9	30.2	75.8	5.4			25.37
	Bluegill		65.5	26.9		10.3	34.3	18.3	103.4	79.0			48.24
	Crappie Hybrid		0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.00
	Golden Shiner		0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.00
	Largemouth Bass		0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.00
	Northern Pike		0.8	0.5		0.0	0.1	0.2	0.4	0.0			0.29
	White Crappie		0.9	1.6		0.0	1.3	1.2	2.0	0.0			1.00
	Yellow Perch		3.9	1.9		1.2	16.5	6.5	19.2	5.6			7.83
std exp gill net	Black Crappie		1.5										1.50
	Bluegill		5.5										5.50
	Golden Shiner		0.0										0.00
	Largemouth Bass		0.0										0.00
	Northern Pike		1.5										1.50
	Yellow Perch		0.5										0.50

## 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										
			2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	
AFS std frame net	Black Crappie	PSD				23							
		PSD-P				3							
		Wr				90							
	Bluegill	PSD				59							
		PSD-P				0							
		Wr				92							
	Yellow Perch	PSD				54							
		PSD-P				0							
		Wr				77							
AFS std gill net	Black Crappie	PSD				10		0					
		PSD-P				0		0					
		Wr				92		86					
	Bluegill	PSD				100							
		PSD-P				0							
		Wr				94							
	Largemouth Bass	PSD				25			100				
		PSD-P				25			100				
		Wr				102			99				
	Northern Pike	PSD				100			100				
		PSD-P				100			100				
		Wr				94			102				
	Yellow Perch	PSD				0			0				
		PSD-P				0			0				
		Wr				85			75				
boat shocker (day)	Largemouth Bass	PSD									48		60
		PSD-P									40		33
		Wr									108		115
boat shocker (night)	Largemouth Bass	PSD	72	87	71	58	70	71	59				
		PSD-P	47	51	28	30	32	33	32				
		Wr	113	101	107	106	100	106	108				
frame net (std 3/4 in)	Black Crappie	PSD		6	25		10	15	4	13	7		

Gear	Species	Index	Year									
			2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
frame net (std 3/4 in)	Black Crappie	PSD-P		0	4			1	1	2	0	0
		Wr		104	101		91	91	93	91	86	
	Bluegill	PSD		23	42		47	60	43	34	23	
		PSD-P		1	0		0	0	0	0	1	
		Wr		105	114		90	94	98	95	87	
		PSD		0				0				
	Largemouth Bass	PSD-P		0				0				
		PSD		50	80			100	100	100		
	Northern Pike	PSD-P		33	0			100	0	100		
		Wr		92	96			108	81	107		
		PSD		13	26		71	34	18	24	14	
	Yellow Perch	PSD-P		0	5		0	3	5	3	0	
		Wr		92	89		78	89	86	81	81	
		PSD		0								
	std exp gill net	Black Crappie	PSD		0							
PSD-P				0								
Wr				100								
Bluegill		PSD		73								
		PSD-P		0								
		Wr		97								
Northern Pike		PSD		100								
		PSD-P		100								
		Wr		102								
Yellow Perch		PSD		0								
		PSD-P		0								
		Wr		92								

## Length at Capture

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

Species: Bluegill

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2017	100				147 (27)	155 (8)	165 (66)				

Species: Largemouth Bass

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2015	78	145 (16)	236 (10)		322 (27)	351 (21)	412 (4)				

## **Fish Condition**

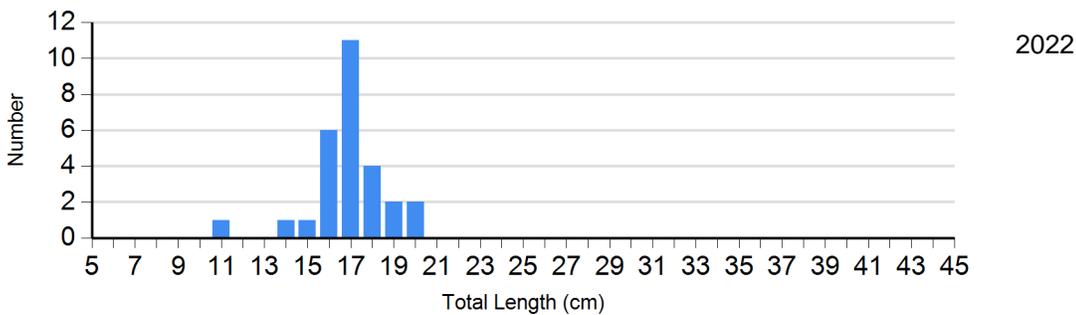
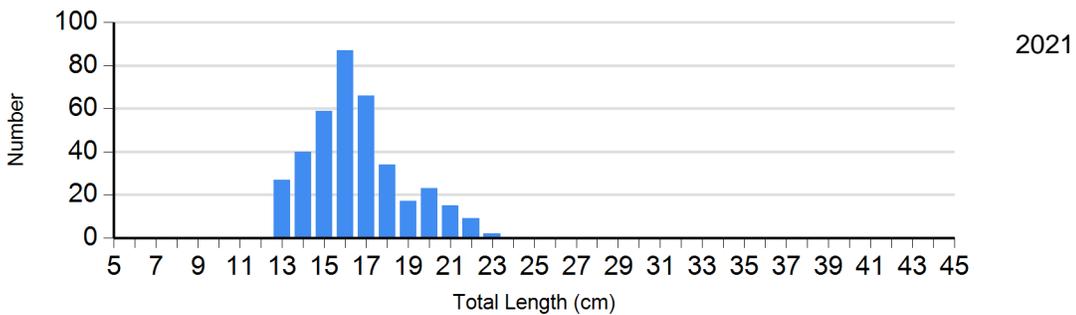
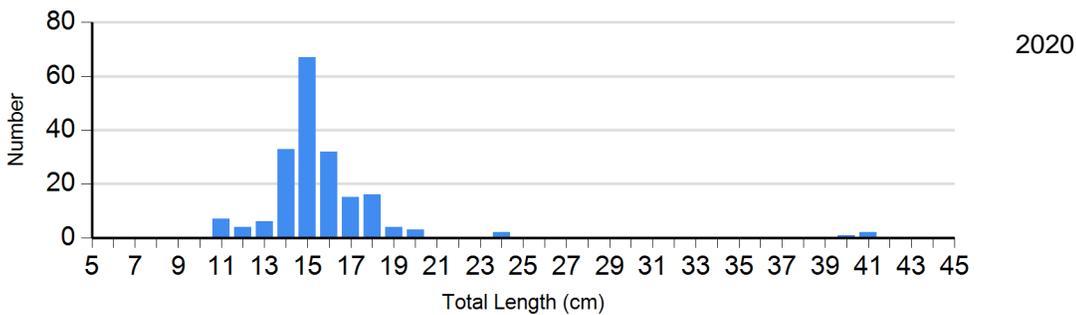
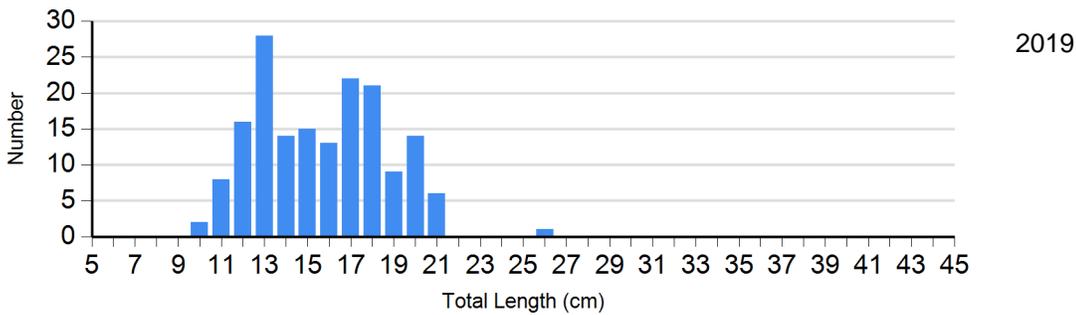
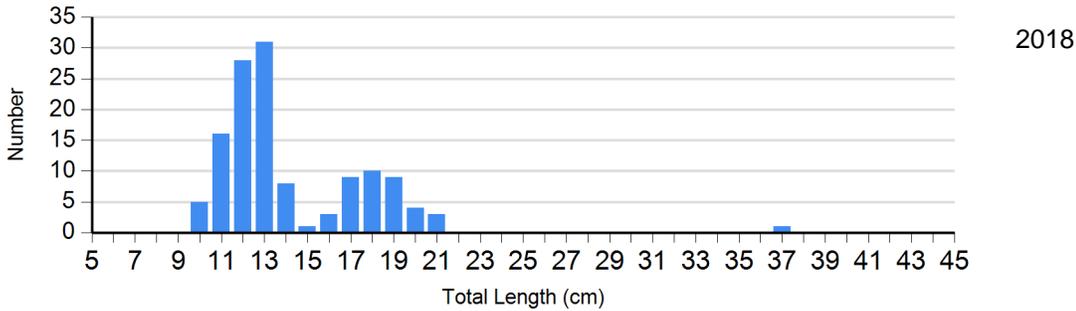
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Black Crappie Frame Net	2019	122	93 (0.6)	20	83 (2.5)	1		0	
	2020	173	94 (0.7)	5	88 (1.2)	0		3	89 (3.3)
	2021	330	91 (0.7)	49		0		0	
	2022	25	86 (1.6)	2	84 (5.2)	0		0	
Bluegill Frame Net	2019	109	99 (1.2)	165	92 (1.0)	0		0	
	2020	63	101 (1.8)	47	96 (1.1)	0		0	
	2021	339	96 (1.0)	176	93 (1.7)	2		0	
	2022	306	88 (0.8)	87	72 (1.1)	2		0	
Largemouth Bass Electro Fishing	2019	22	111 (2.1)	28	102 (1.5)	25	104 (1.9)	0	
	2020	31	108 (1.2)	21	107 (2.2)	24	109 (1.8)	0	
	2021	42	106 (1.2)	6	105 (2.4)	32	113 (1.6)	0	
	2023	29	118 (1.3)	19	115 (1.7)	23	112 (2.4)	1	93
Northern Pike Gill Net	2019	0		0		2	102 (6.2)	0	
Yellow Perch Gill Net	2019	4	75 (22.4)	0		0		0	

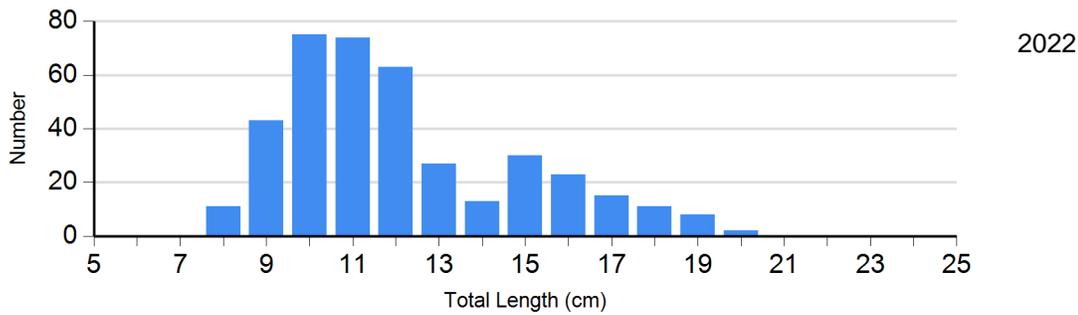
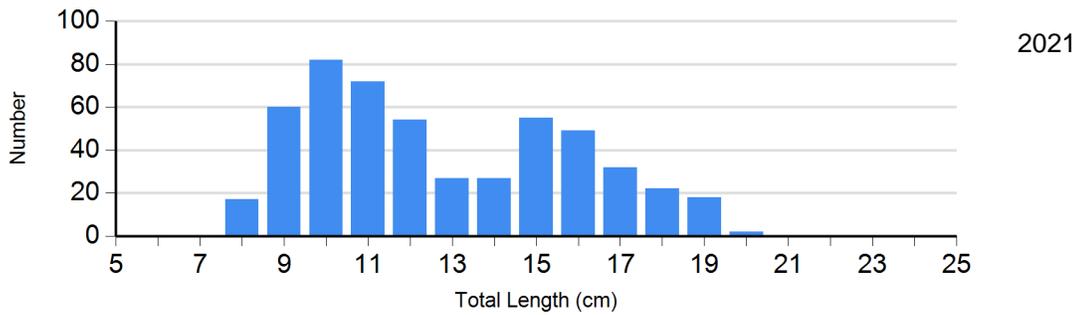
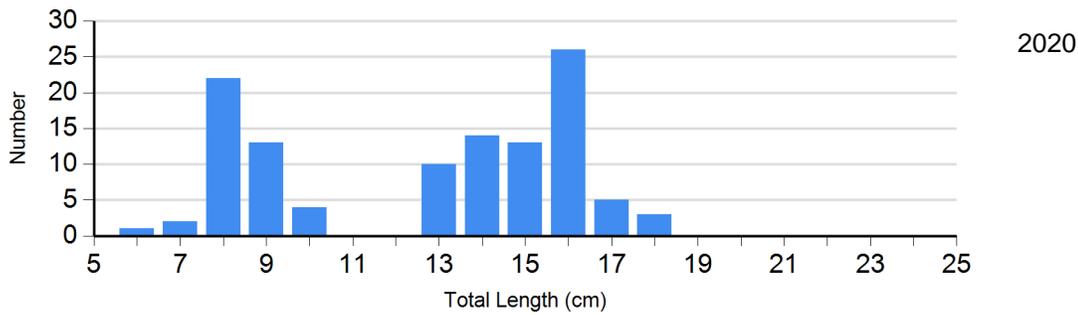
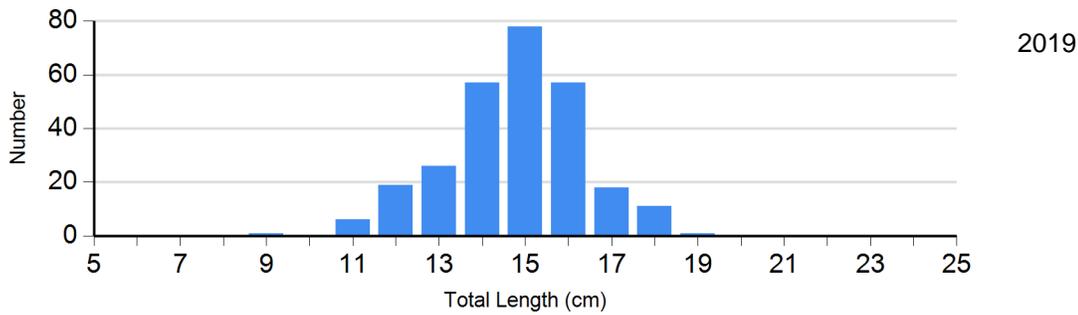
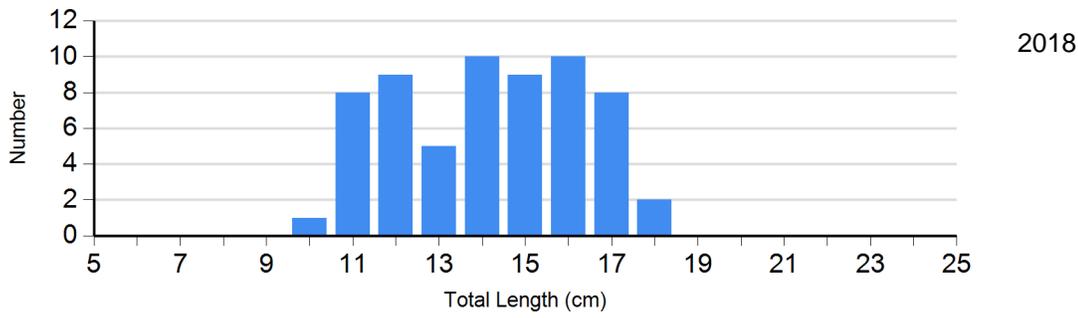
# Length Frequency Distribution

Length frequency histogram of species sampled by year.

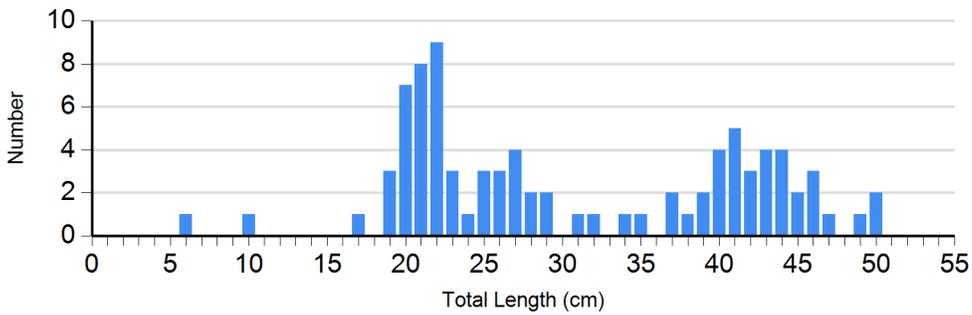
Species: Black Crappie  
Gear: frame net (std 3/4 in)



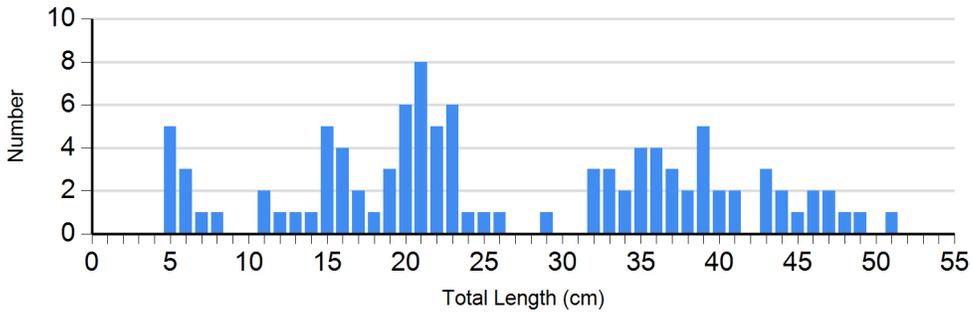
Species: Bluegill  
Gear: frame net (std 3/4 in)



Species: Largemouth Bass  
 Gear: boat shocker (day)

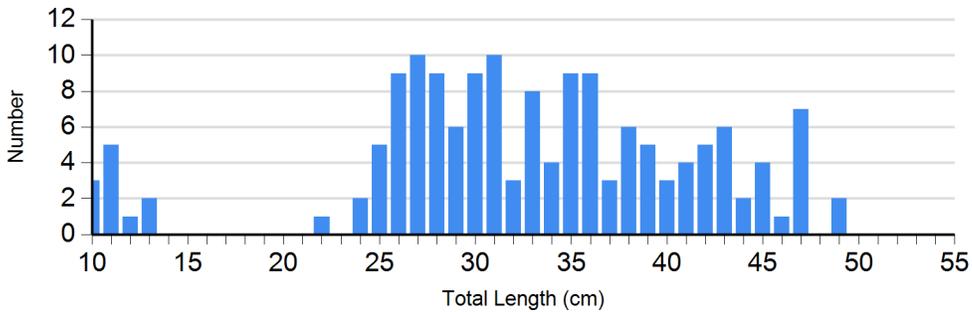


2021

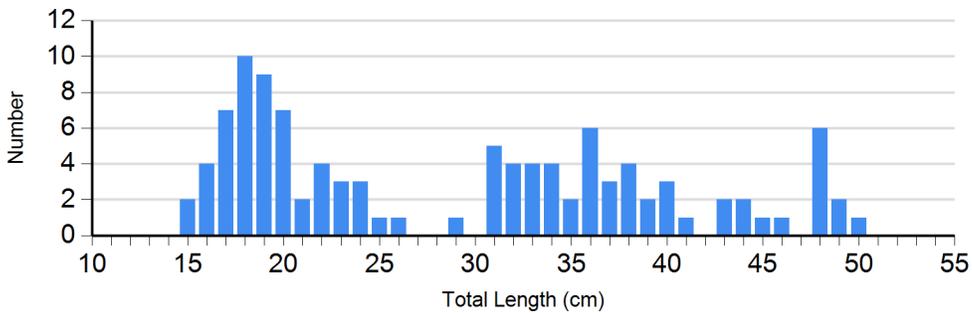


2023

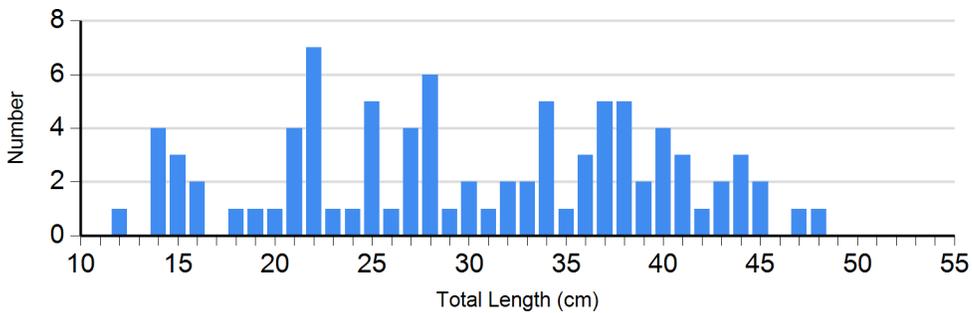
Species: Largemouth Bass  
 Gear: boat shocker (night)



2018



2019

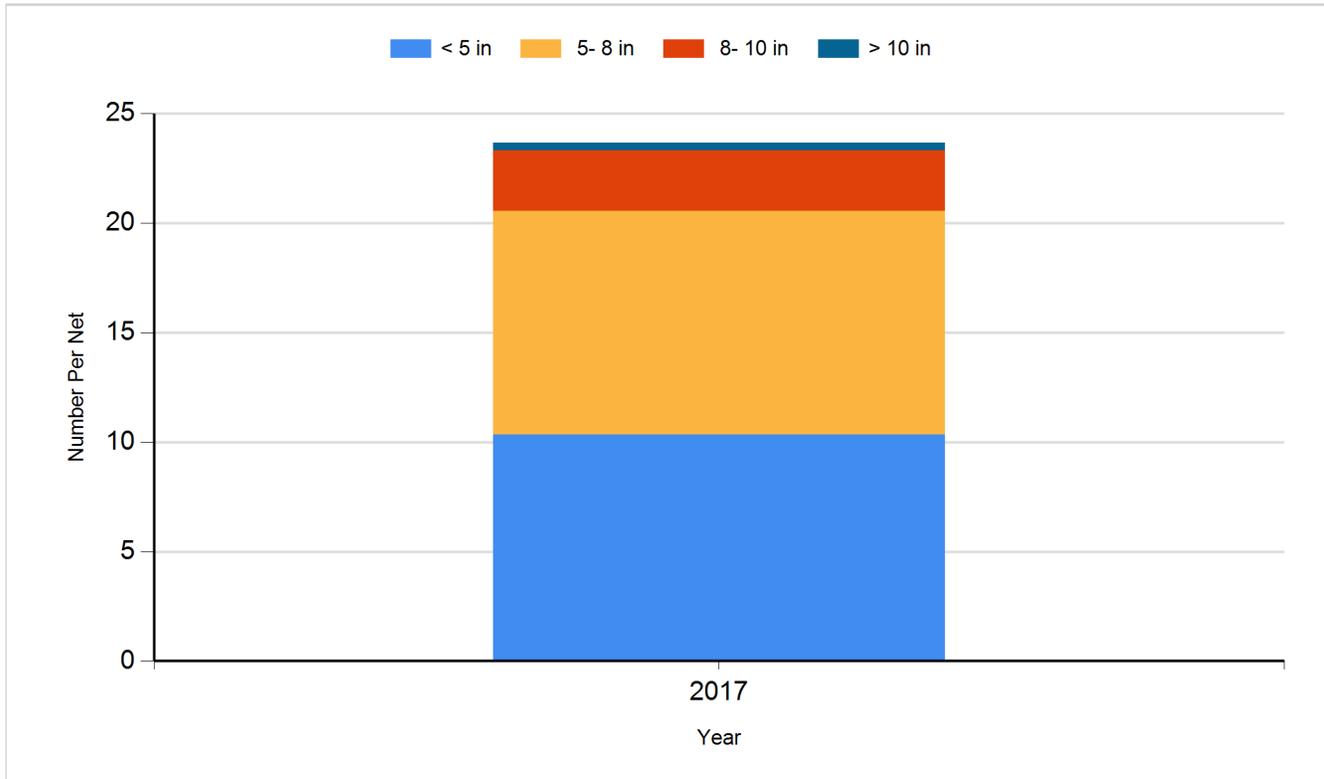


2020

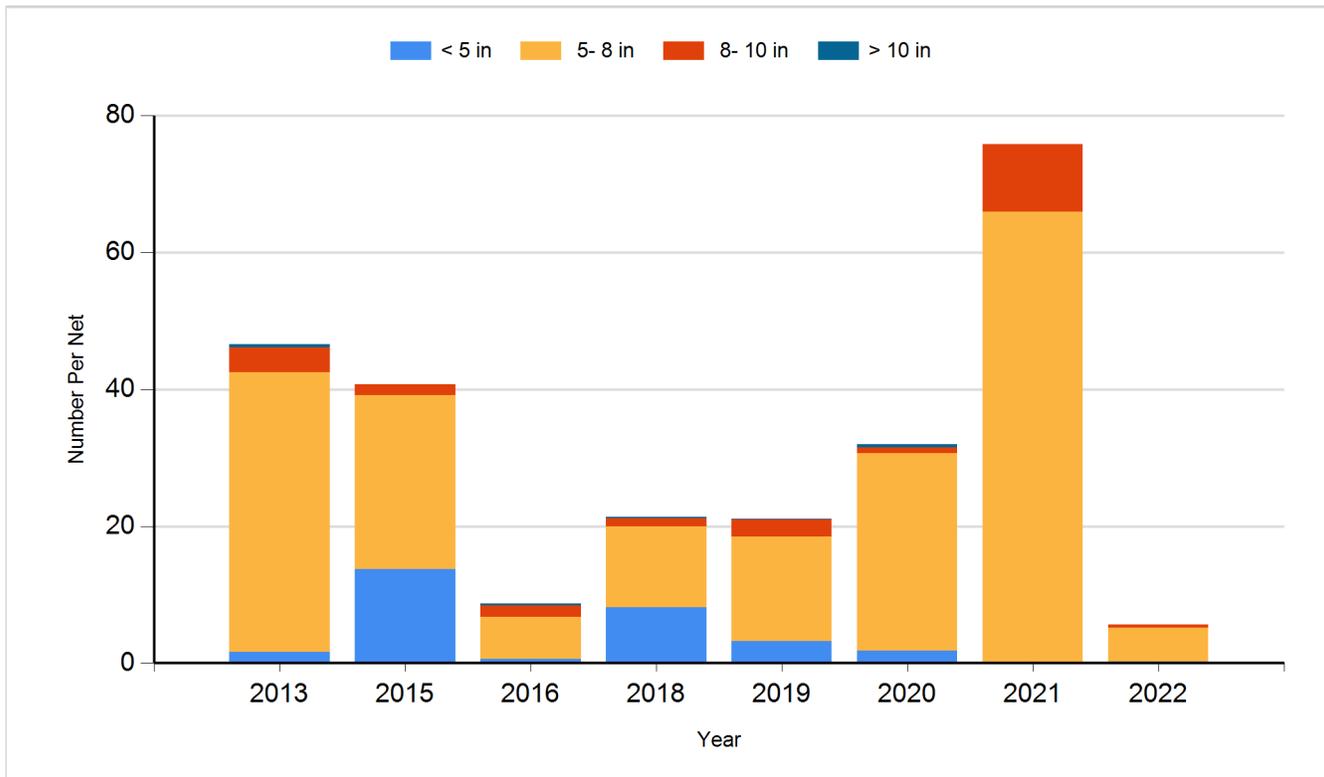
## Historic Fish Sizes and Relative Abundance

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

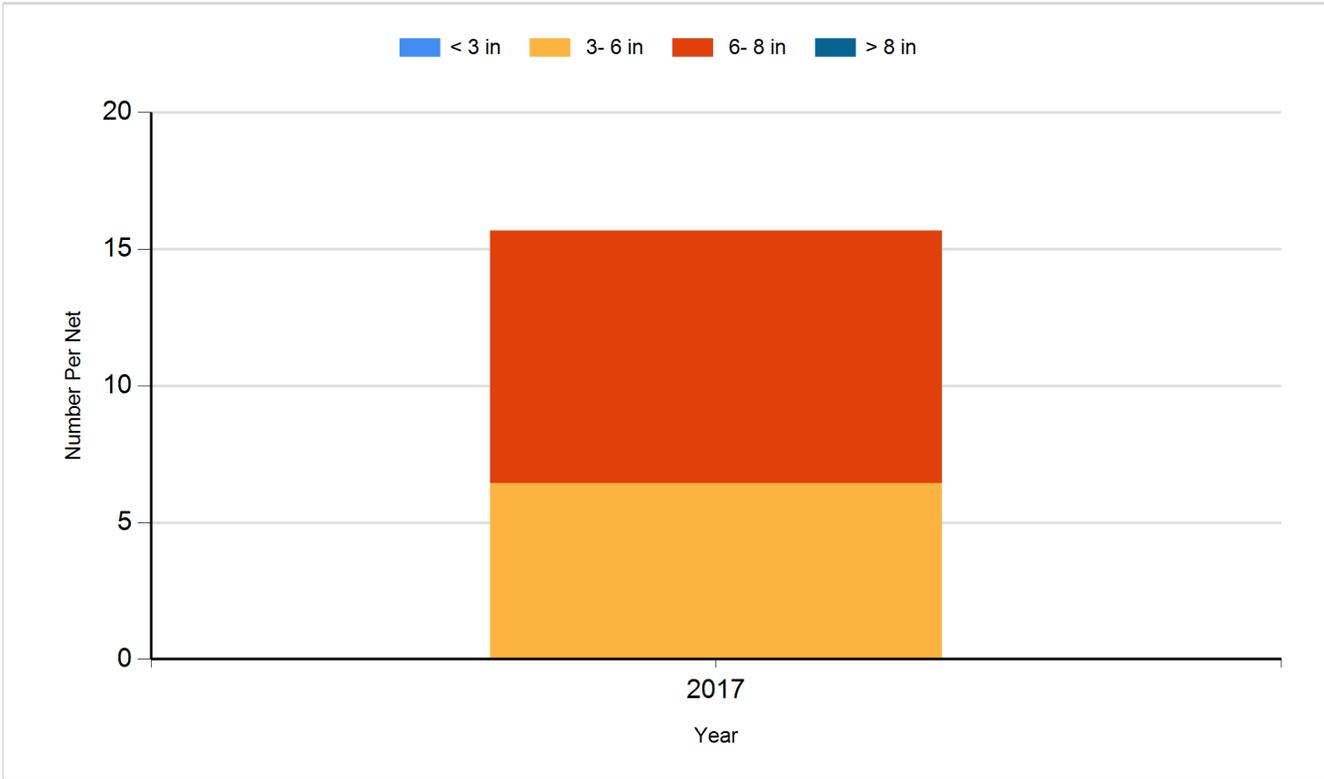
Species: Black Crappie  
Gear: AFS std frame net



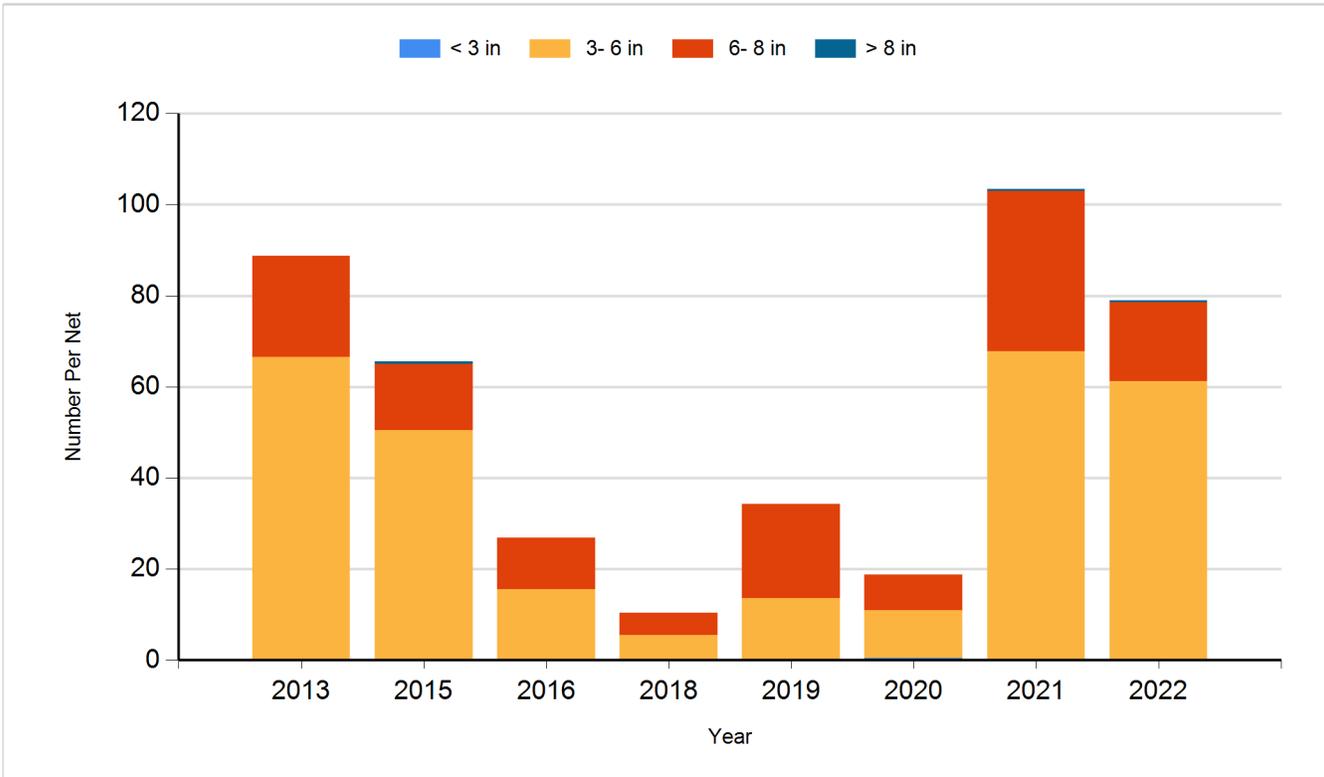
Species: Black Crappie  
Gear: frame net (std 3/4 in)



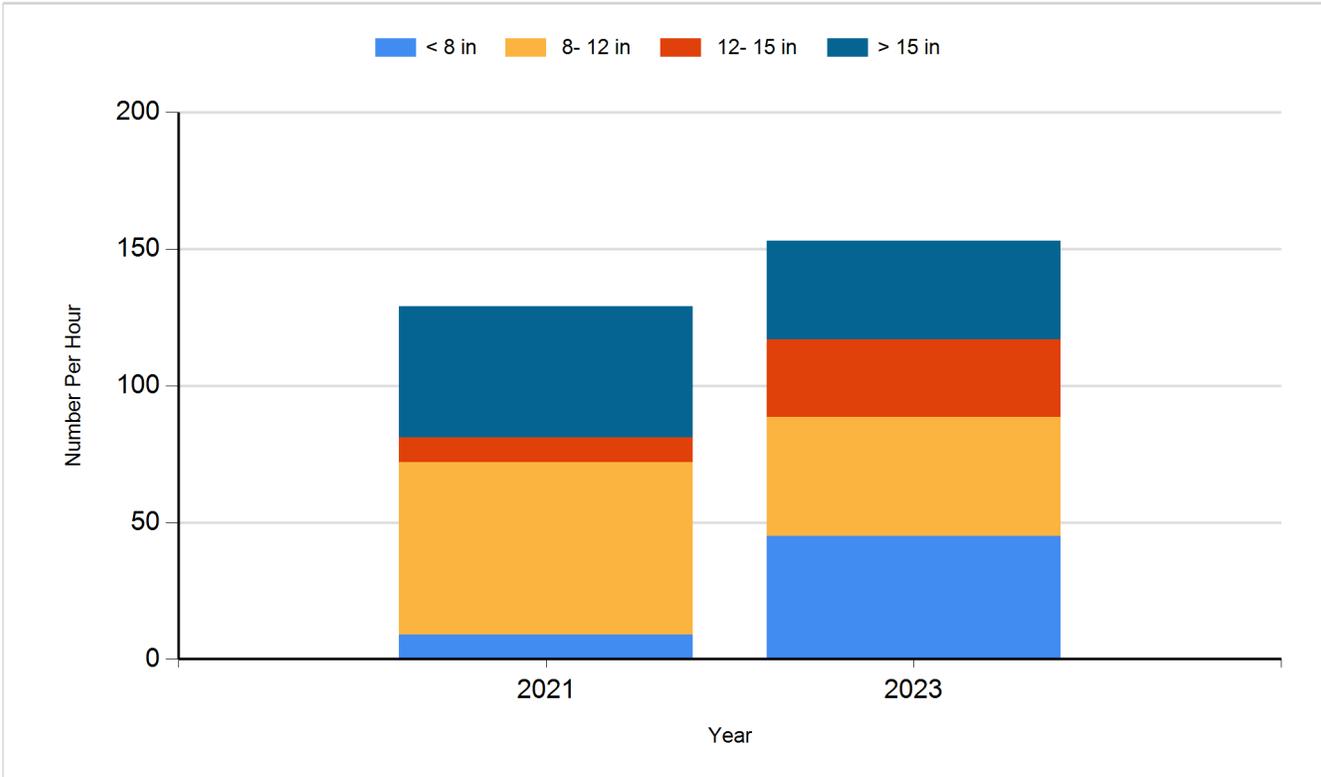
Species: Bluegill  
Gear: AFS std frame net



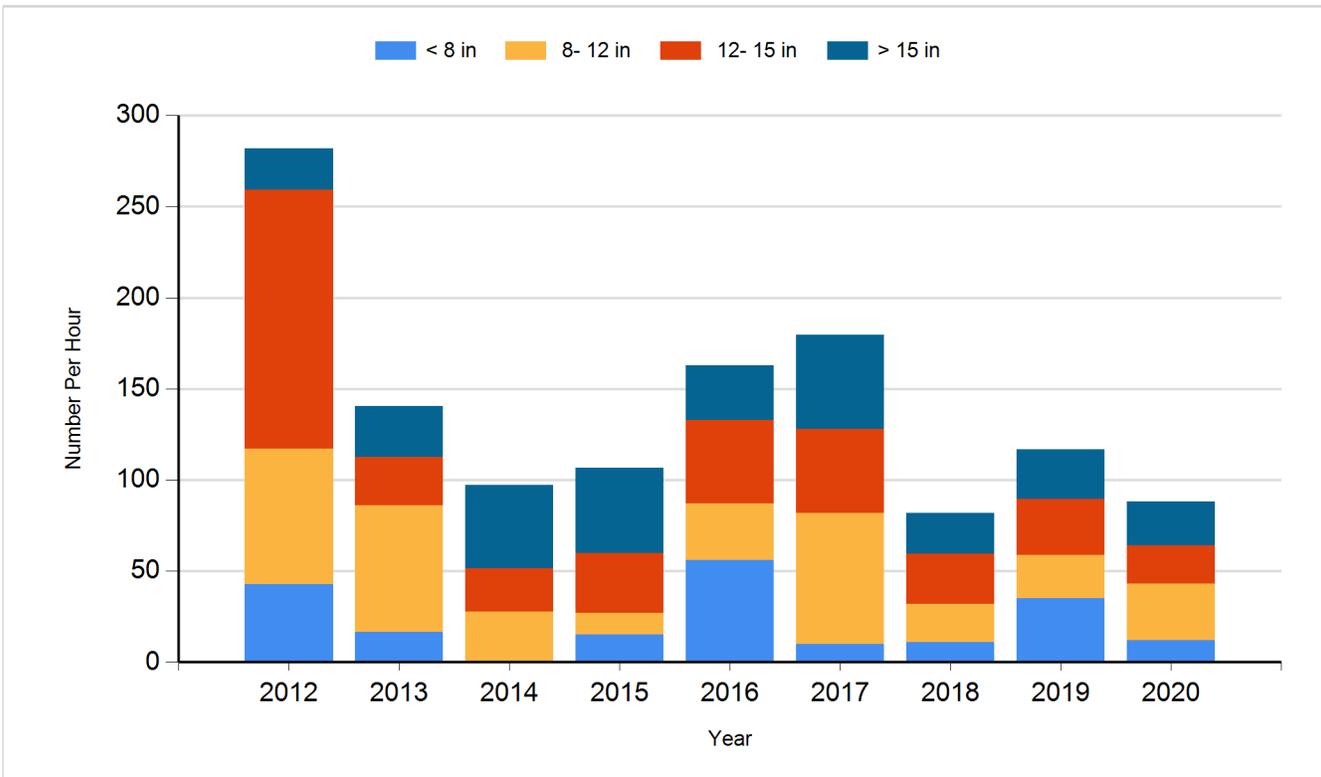
Species: Bluegill  
Gear: frame net (std 3/4 in)



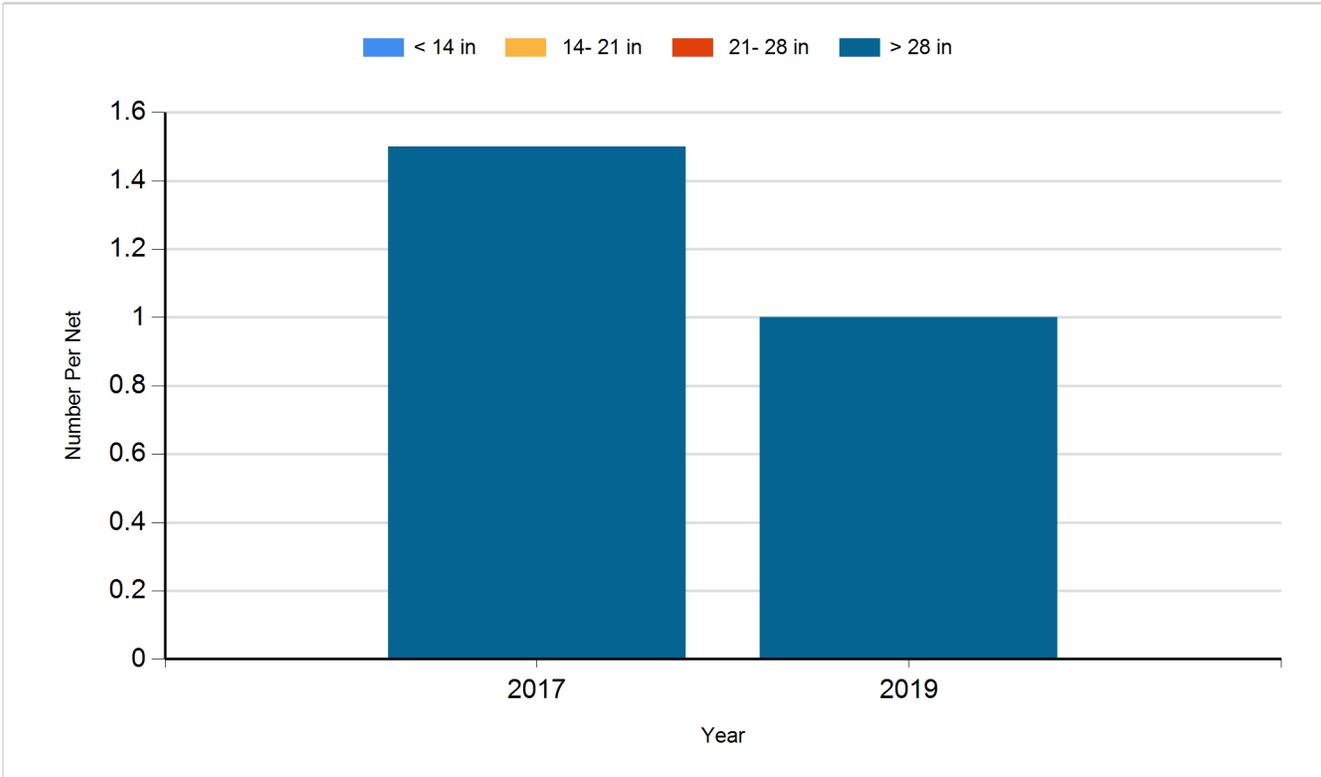
Species: Largemouth Bass  
Gear: boat shocker (day)



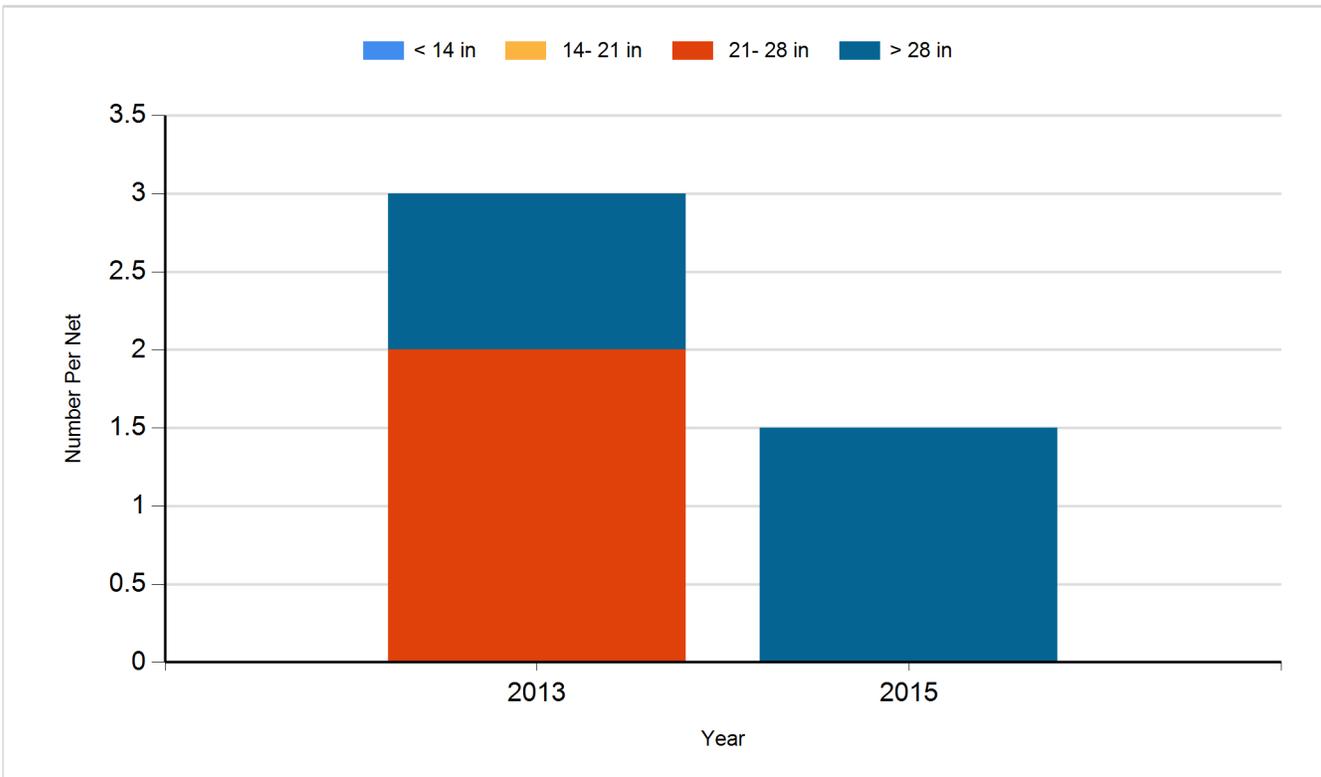
Species: Largemouth Bass  
Gear: boat shocker (night)



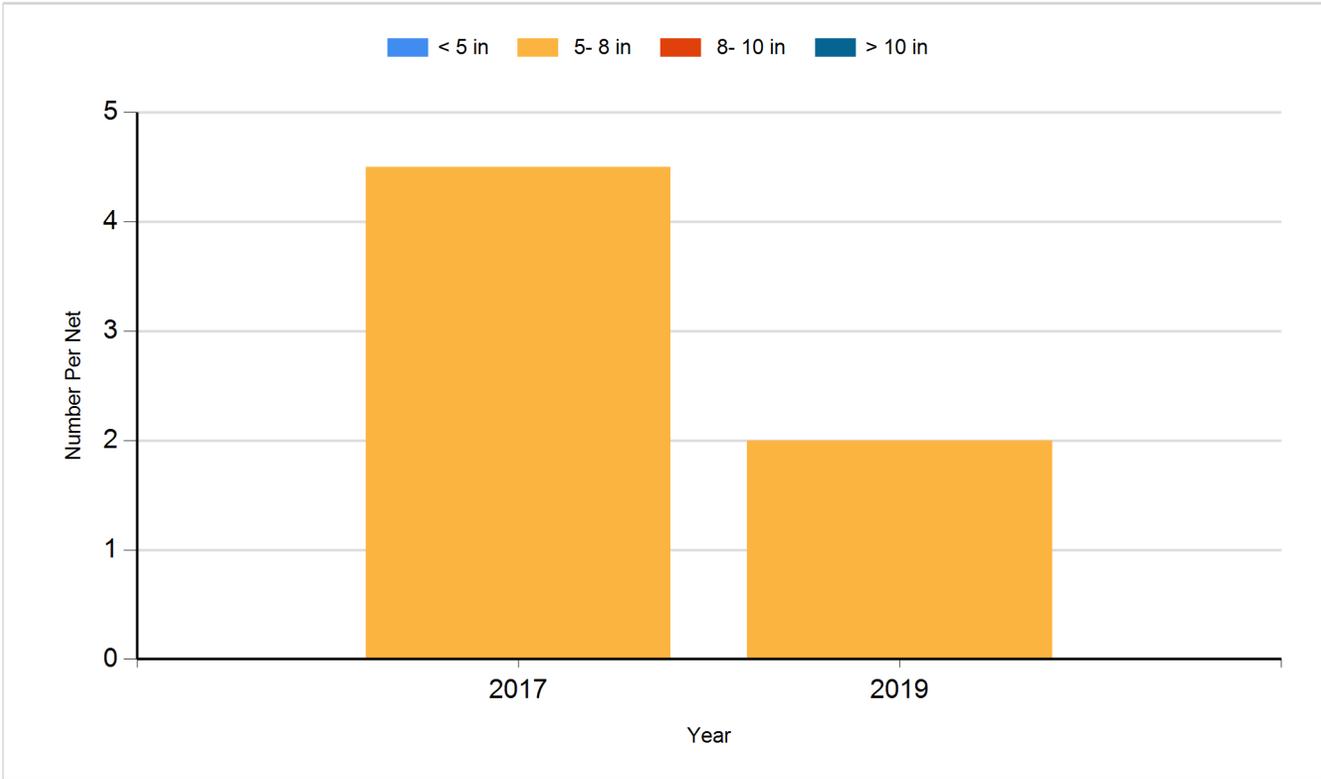
Species: Northern Pike  
Gear: AFS std gill net



Species: Northern Pike  
Gear: std exp gill net



Species: Yellow Perch  
Gear: AFS std gill net



Species: Yellow Perch  
Gear: std exp gill net

