

# SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

Henry, Bon Homme County

LJA-Lake-588-000

2022

## Lake Information

**Name:** Henry **Maximum Depth:** 37 Feet  
**County:** Bon Homme **Mean Depth:** 14 Feet  
**Legal Description:** T96-R58-Sec.9-10  
**Surface Area:** 104 Acres

## Surveys and Investigations

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

Gear	Date	Effort
boat shocker (day)	Jun 22, 2022	2400 seconds
frame net (std 3/4 in)	May 16, 2022	10 net-nights

## **Common Fish Species Present**

Largemouth Bass

Bluegill

Black Crappie

White Sucker

Black Bullhead

Yellow Perch

Common Carp

Sunfish Hybrid

Green Sunfish

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
boat shocker (day)	Largemouth Bass	32	39.0	8.5	38	15	4		89	2
frame net (std 3/4 in)	Black Bullhead	7	0.7	0.8	100		57			
	Black Crappie	124	10.3	7.5	99		68	7	96	1
	Bluegill	194	19.2	11.7	11	3	0		91	2
	Channel Catfish	1	0.1	0.1	100		0		85	
	Common Carp	4	0.4	0.6	100		25			
	Green Sunfish	2	0.2	0.2	0		0		79	1
	Sunfish Hybrid	4	0.4	0.2	75		0		95	4
	White Sucker	19	1.9	1.3	100		100			
	Yellow Perch	4	0.4	0.3	25		25		80	7

## 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	
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		
AFS std frame net	Black Bullhead					0.4							0.40
	Black Crappie					4.0							4.00
	Bluegill					1.8							1.80
	Green Sunfish					0.2							0.20
	White Sucker					1.0							1.00
AFS std gill net	Black Bullhead					0.3							0.30
	Black Crappie					3.0							3.00
	Common Carp					0.0							0.00
	Green Sunfish					0.2							0.20
	Largemouth Bass					0.2							0.20
	Saugeye					0.2							0.20
	White Sucker					4.0							4.00
	Yellow Perch					5.0							5.00
boat shocker (day)	Largemouth Bass							91.3			39.0		65.15
boat shocker (night)	Largemouth Bass	33.0	37.5	25.5									32.00
frame net (std 3/4 in)	Black Bullhead	0.7	0.3	0.0	0.2		0.0	1.2			0.7		0.44
	Black Crappie	16.1	16.0	16.9	2.2		10.4	24.2			10.3		13.73
	Bluegill	21.1	24.6	20.5	16.1		5.0	6.4			19.2		16.13
	Channel Catfish	0.0	0.9	0.1	0.1		0.0	0.0			0.1		0.17
	Common Carp	0.4	0.0	0.1	0.1		0.2	0.4			0.4		0.23
	Green Sunfish	0.0	0.0	0.0	0.1		0.0	0.0			0.2		0.04
	Largemouth Bass	0.1	0.0	0.0	0.0		0.0	0.4			0.0		0.07
	Sunfish Hybrid	0.0	0.0	0.0	0.0		0.0	0.2			0.4		0.09
	Walleye	0.0	0.0	0.0	0.0		0.0	0.0			0.0		0.00
	White Sucker	3.5	2.0	0.6	0.4		1.0	1.4			1.9		1.54
	Yellow Perch	0.0	0.1	0.0	0.4		0.4	0.2			0.4		0.21

## 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										
			2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
AFS std frame net	Black Bullhead	PSD					50						
		PSD-P					0						
	Black Crappie	PSD					65						
		PSD-P					20						
	Bluegill	Wr					89						
		PSD					78						
		PSD-P					0						
	Green Sunfish	Wr					99						
		PSD					0						
		PSD-P					0						
	White Sucker	PSD					100						
		PSD-P					80						
AFS std gill net	Black Bullhead	PSD					0						
		PSD-P					0						
	Black Crappie	PSD					33						
		PSD-P					6						
		Wr					96						
	Common Carp	PSD					0						
		PSD-P					0						
	Green Sunfish	PSD					0						
		PSD-P					0						
	Largemouth Bass	PSD					100						
		PSD-P					100						
		Wr					99						
	White Sucker	PSD					92						
		PSD-P					67						
	Yellow Perch	PSD					37						
		PSD-P					0						
		Wr					84						
	boat shocker (day)	Largemouth Bass	PSD								33		
PSD-P										24			4
Wr										95			89

Gear	Species	Index	Year										
			2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
boat shocker (night)	Largemouth Bass	PSD	76	93	78								
		PSD-P	41	35	29								
		Wr	98	89	92								
frame net (std 3/4 in)	Black Bullhead	PSD	100	100		50			0			100	
		PSD-P	71	67		0			0			57	
		Wr	72										
	Black Crappie	PSD	94	96	36	41			23	19			99
		PSD-P	0	0	0	9			10	1			68
		Wr	86	91	93	97			93	85			96
	Bluegill	PSD	100	90	84	58			32	53			11
		PSD-P	0	0	2	2			0	0			0
		Wr	83	92	90	107			88	87			91
	Channel Catfish	PSD		11	100	100							100
		PSD-P		11	0	0							0
		Wr		91	91	102							85
	Common Carp	PSD	100		100	100			0	100			100
		PSD-P	100		100	100			0	50			25
		Wr	80										
	Green Sunfish	PSD				0							0
		PSD-P				0							0
		Wr				83							79
	Largemouth Bass	PSD	100							100			
		PSD-P	100							100			
		Wr	95							107			
White Sucker	PSD	100	100	100	75			100	100			100	
	PSD-P	100	100	100	75			100	100			100	
	Wr	79											
Yellow Perch	PSD		100		25			0	100			25	
	PSD-P		0		0			0	0			25	
	Wr		82		135			76	92			80	



## 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+
2015	172	132 (12)	191 (112)		226 (15)	236 (34)					
2014	161	138 (8)		230 (10)	223 (143)						
2013	161			205 (56)	213 (105)						

Species: Bluegill

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2022	194		98 (113)	135 (68)	170 (13)						
2015	205		150 (75)	161 (18)	183 (42)	186 (66)	212 (4)				
2014	246	108 (20)	146 (4)	162 (9)	177 (199)	183 (14)					
2013	211			171 (179)	178 (32)						

Species: Largemouth Bass

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2013	65		225 (2)	260 (12)	342 (22)	366 (5)	388 (7)	417 (5)	427 (9)	451 (3)	454 (1)

## **Fish Condition**

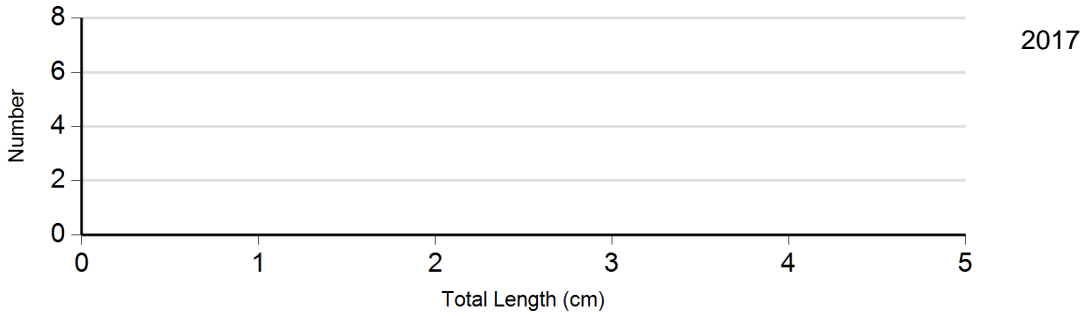
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

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	2018	40	96 (1.5)	7	87 (2.4)	5	77 (2.1)	0	
	2019	98	86 (0.5)	22	79 (0.8)	1	69	0	
	2022	1	95	32	100 (1.7)	70	95 (0.6)	0	
Bluegill Frame Net	2018	17	89 (2.8)	8	88 (1.8)	0		0	
	2019	15	90 (2.9)	17	85 (2.1)	0		0	
	2022	171	92 (1.5)	21	88 (2.1)	0		0	
Largemouth Bass Electro Fishing	2019	92	96 (0.6)	12	92 (9.4)	31	94 (1.5)	2	105
	2022	16	87 (1.4)	9	92 (3.2)	1	89	0	

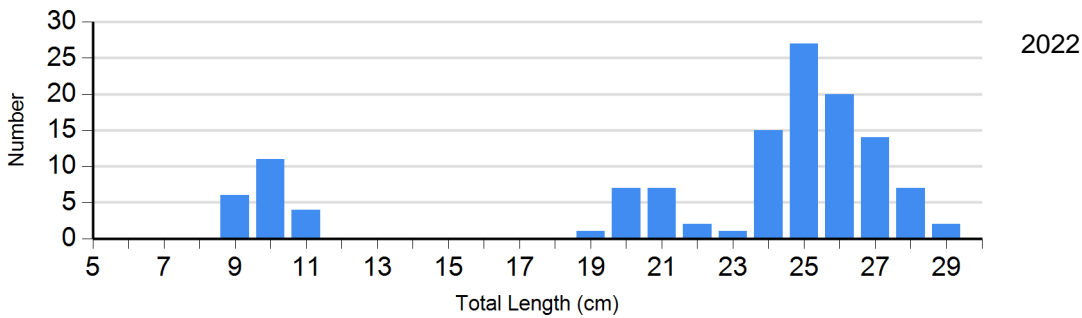
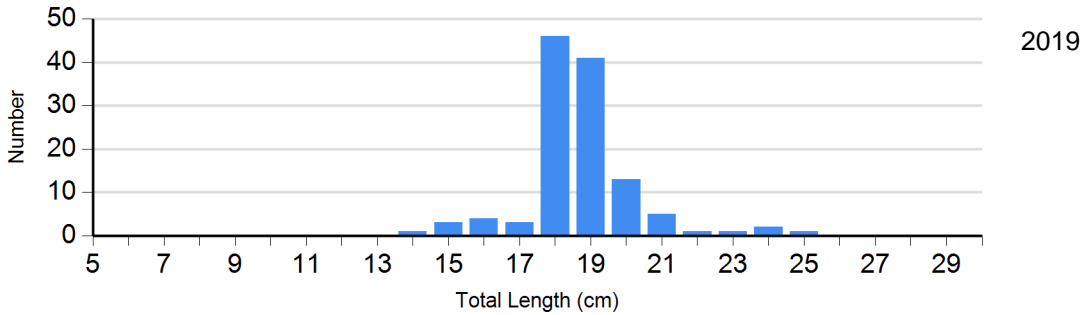
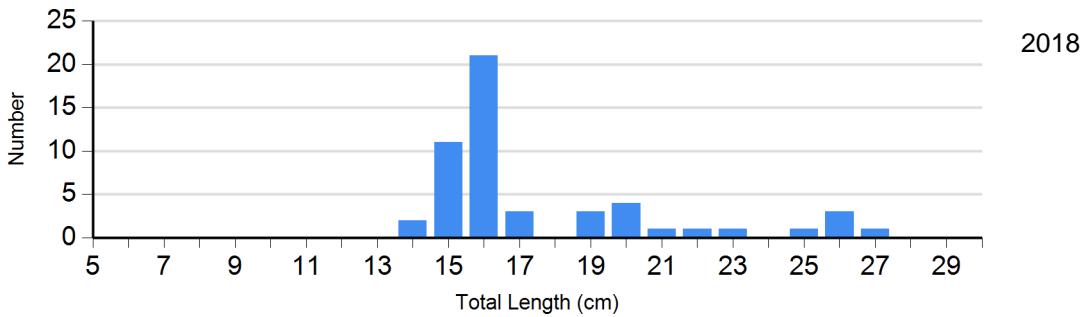
# Length Frequency Distribution

Length frequency histogram of species sampled by year.

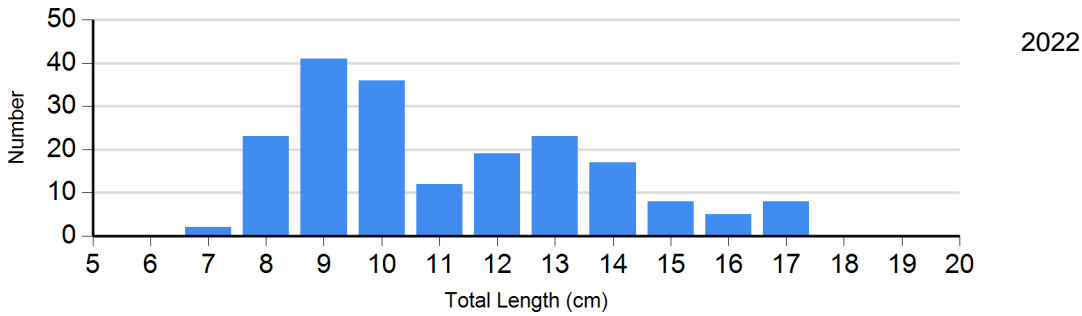
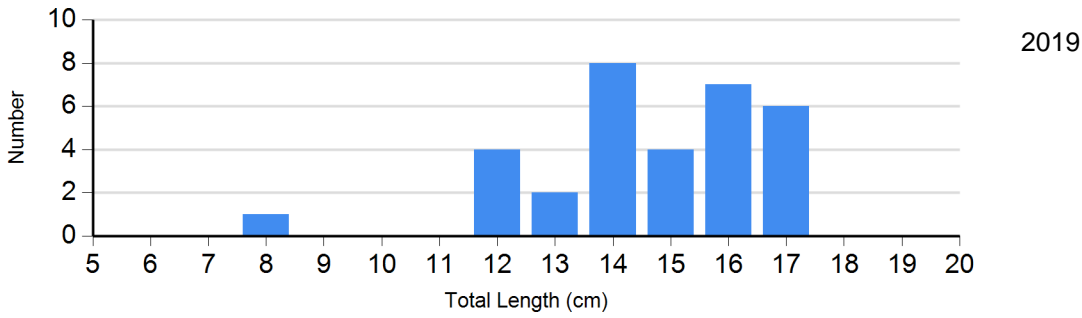
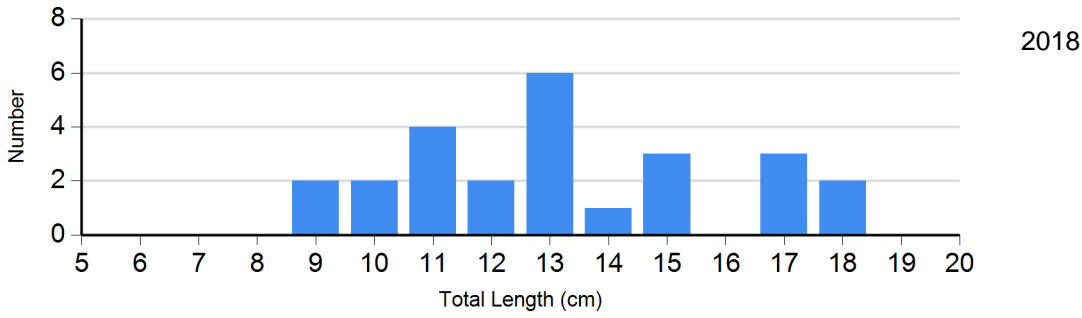
Species: Black Crappie  
Gear: AFS std frame net



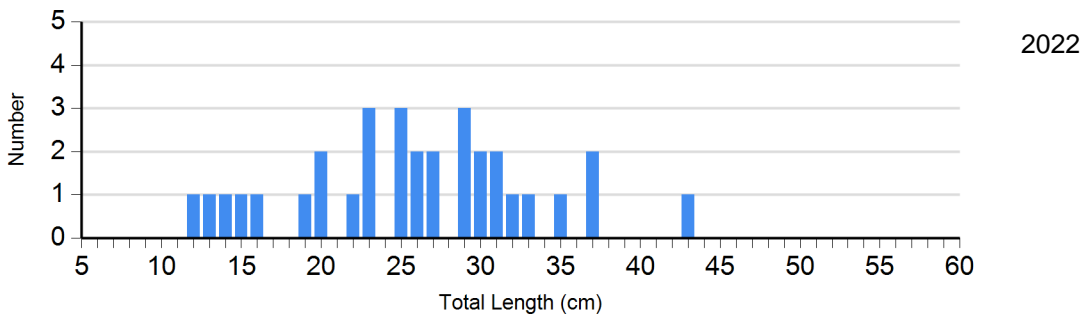
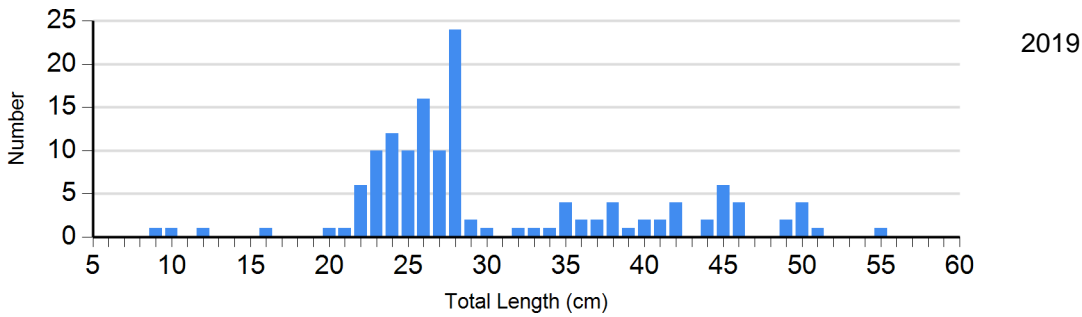
Species: Black Crappie  
Gear: frame net (std 3/4 in)



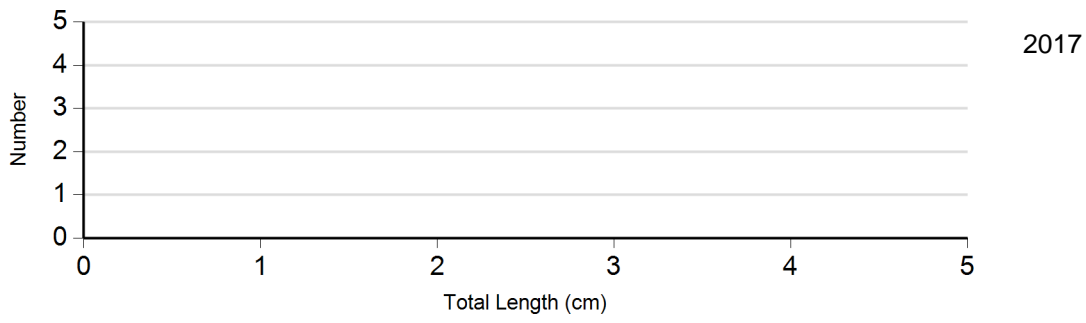
Species: Bluegill  
 Gear: frame net (std 3/4 in)



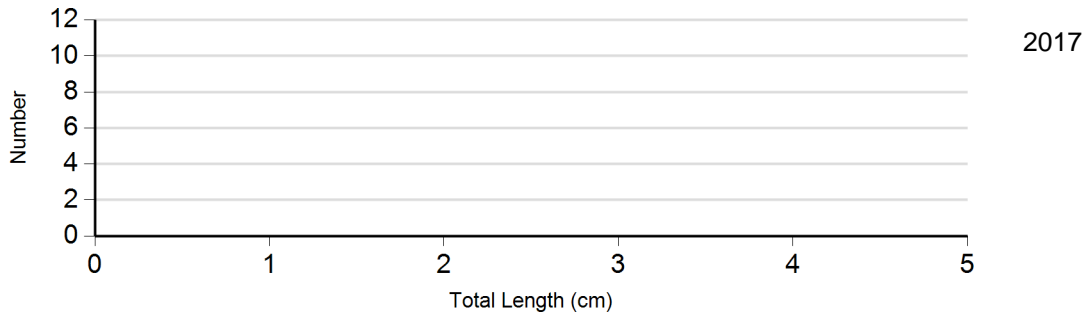
Species: Largemouth Bass  
 Gear: boat shocker (day)



Species: White Sucker  
Gear: AFS std gill net



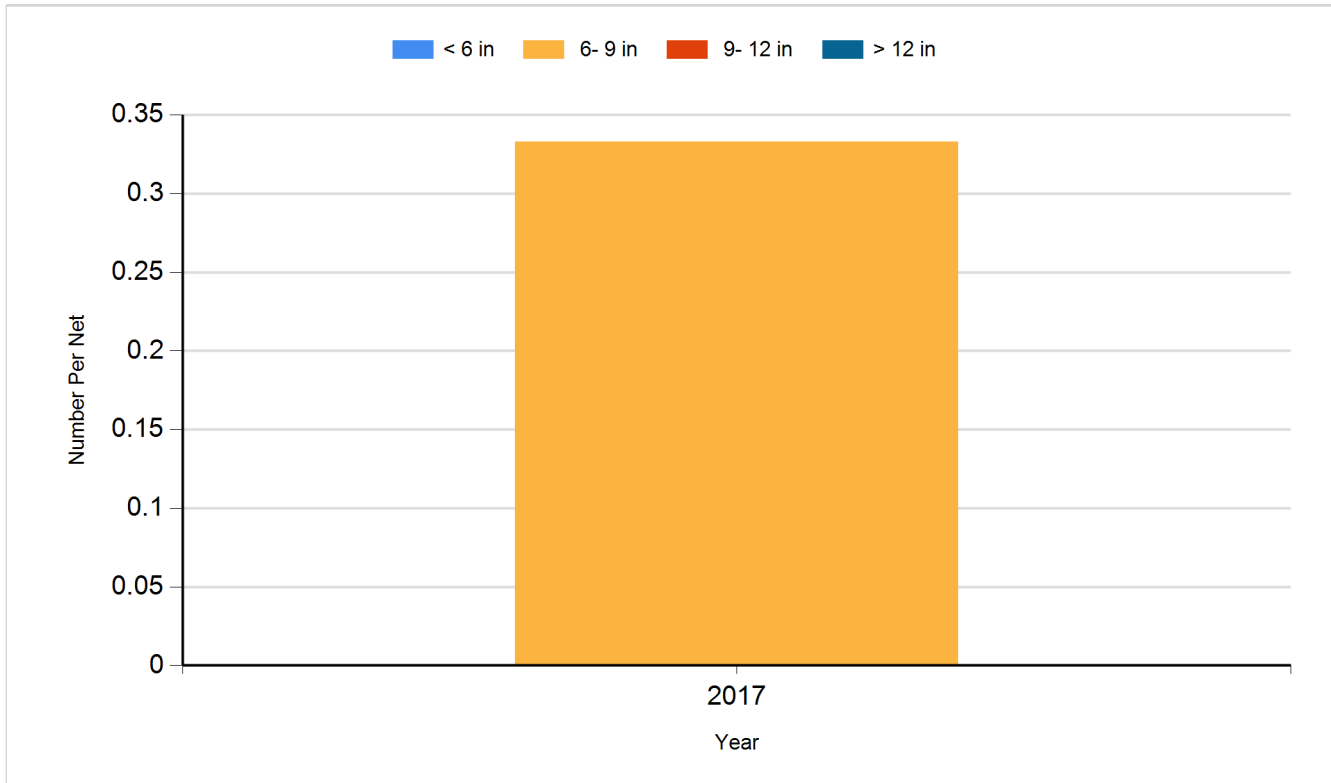
Species: Yellow Perch  
Gear: AFS std gill net



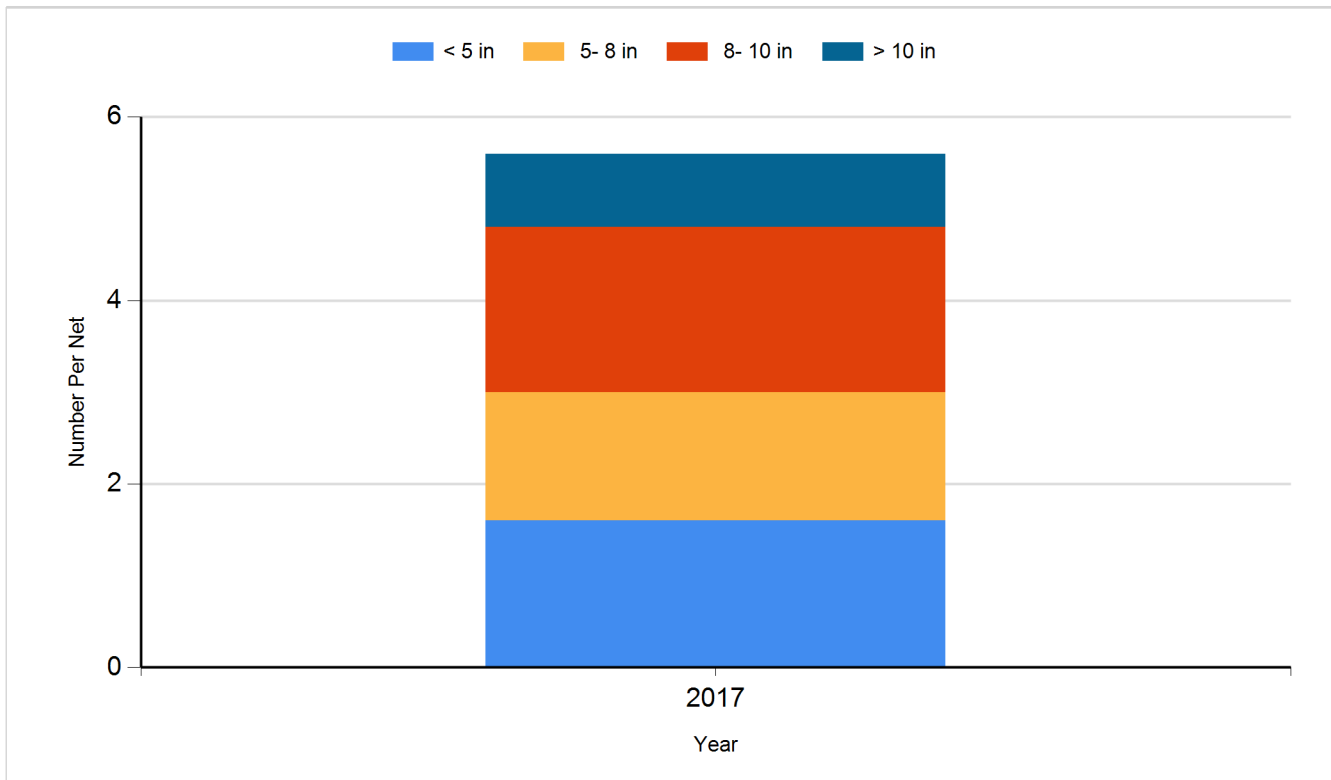
## Historic Fish Sizes and Relative Abundance

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

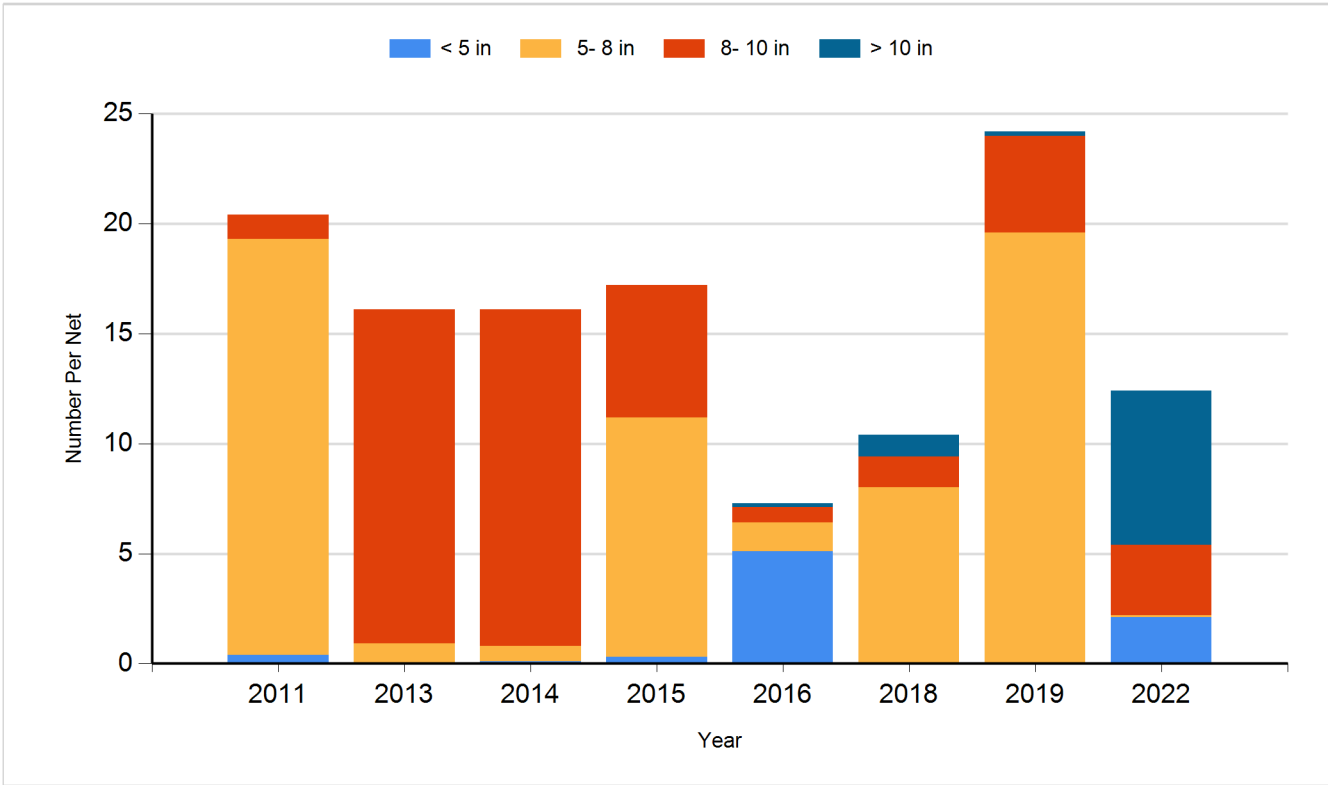
Species: Black Bullhead  
Gear: AFS std gill net



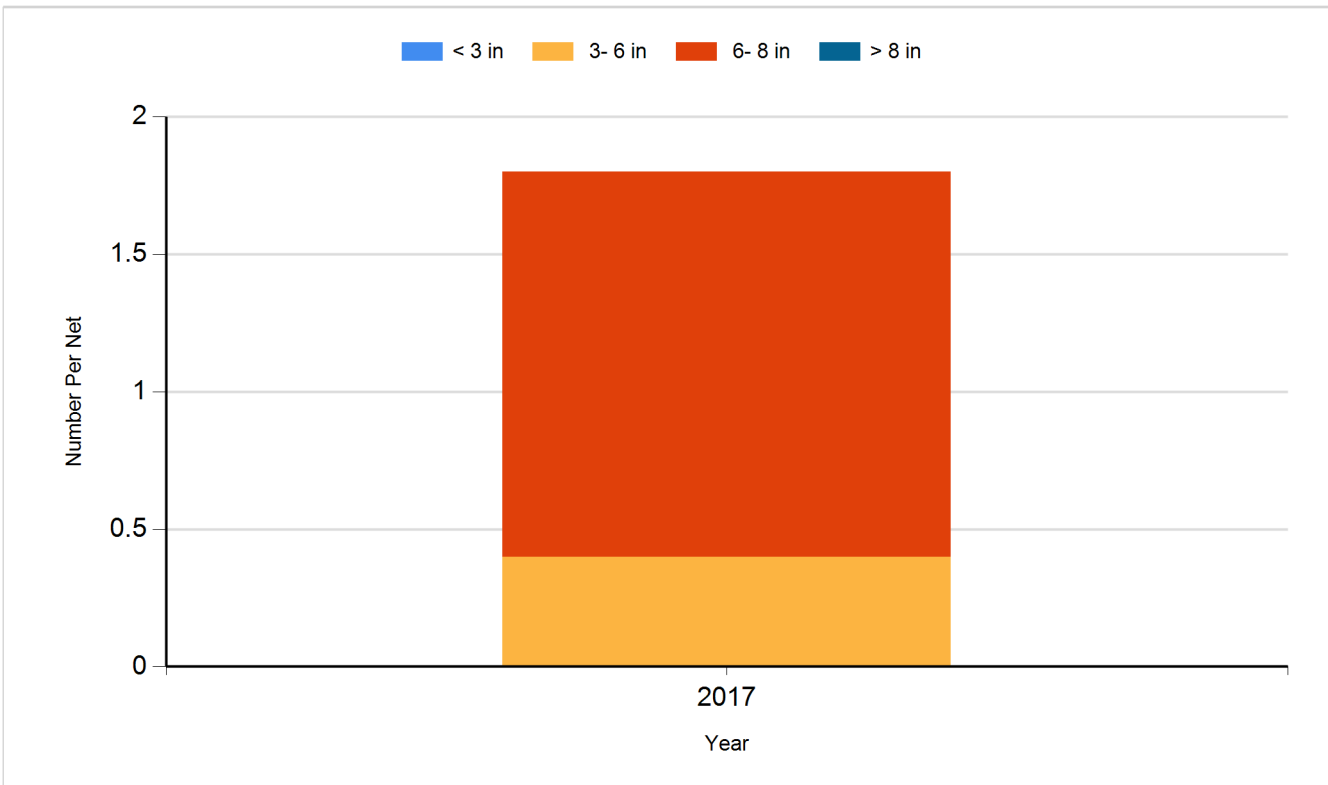
Species: Black Crappie  
Gear: AFS std frame net



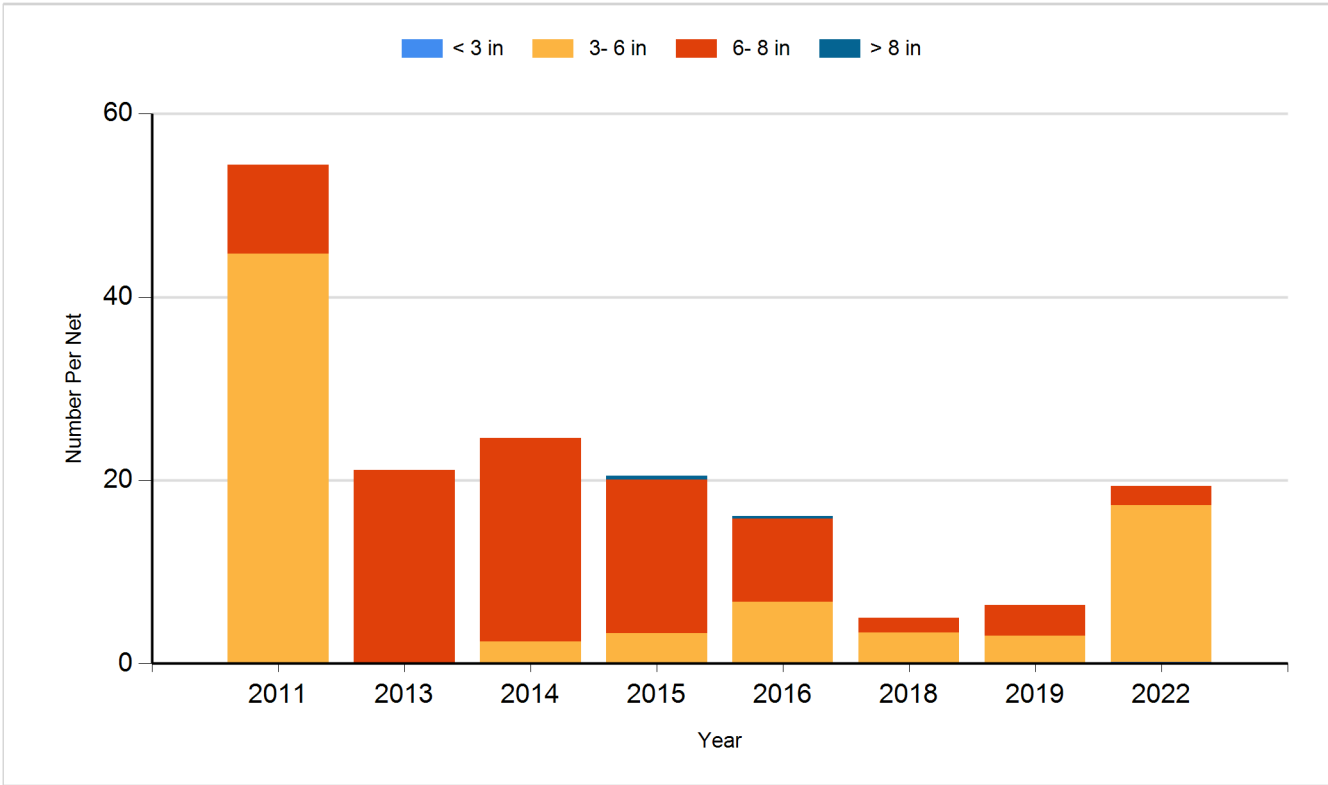
Species: Black Crappie  
Gear: frame net (std 3/4 in)



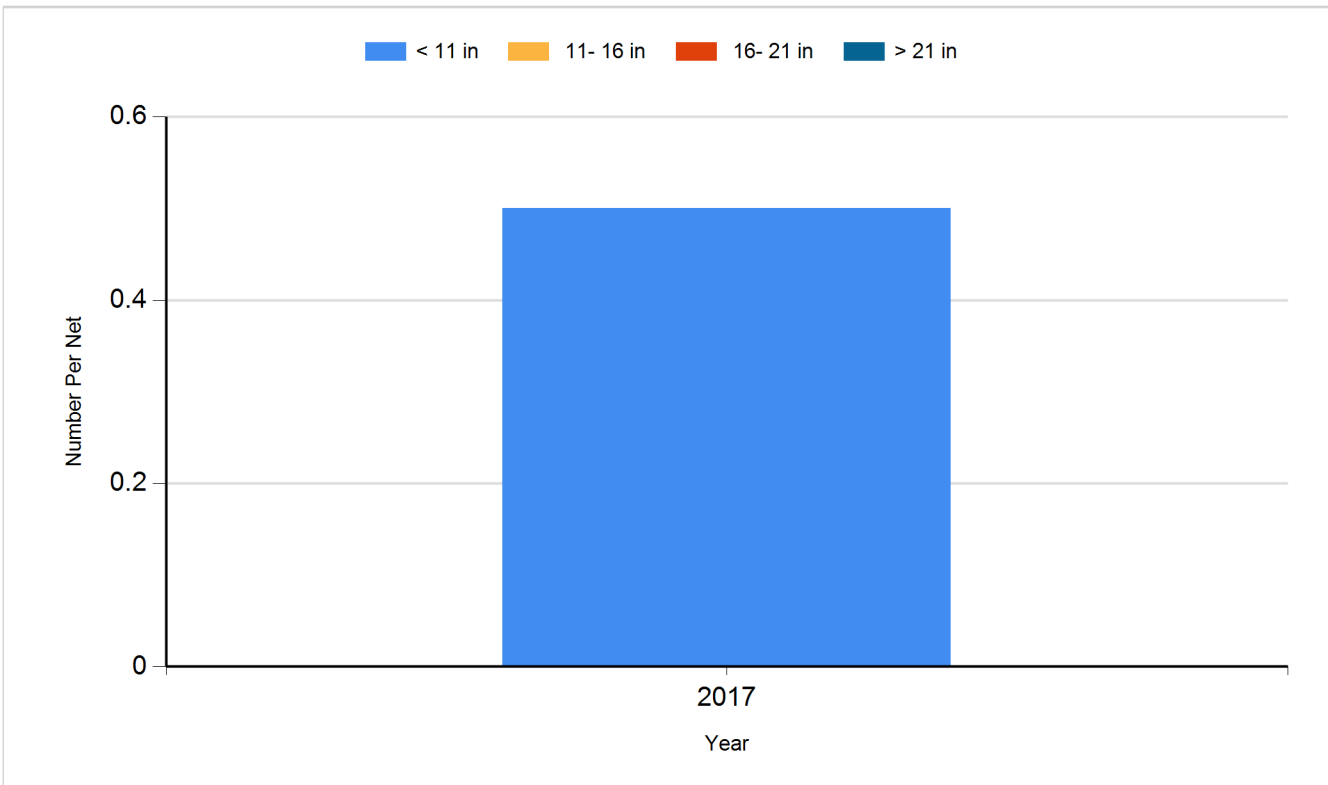
Species: Bluegill  
Gear: AFS std frame net



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

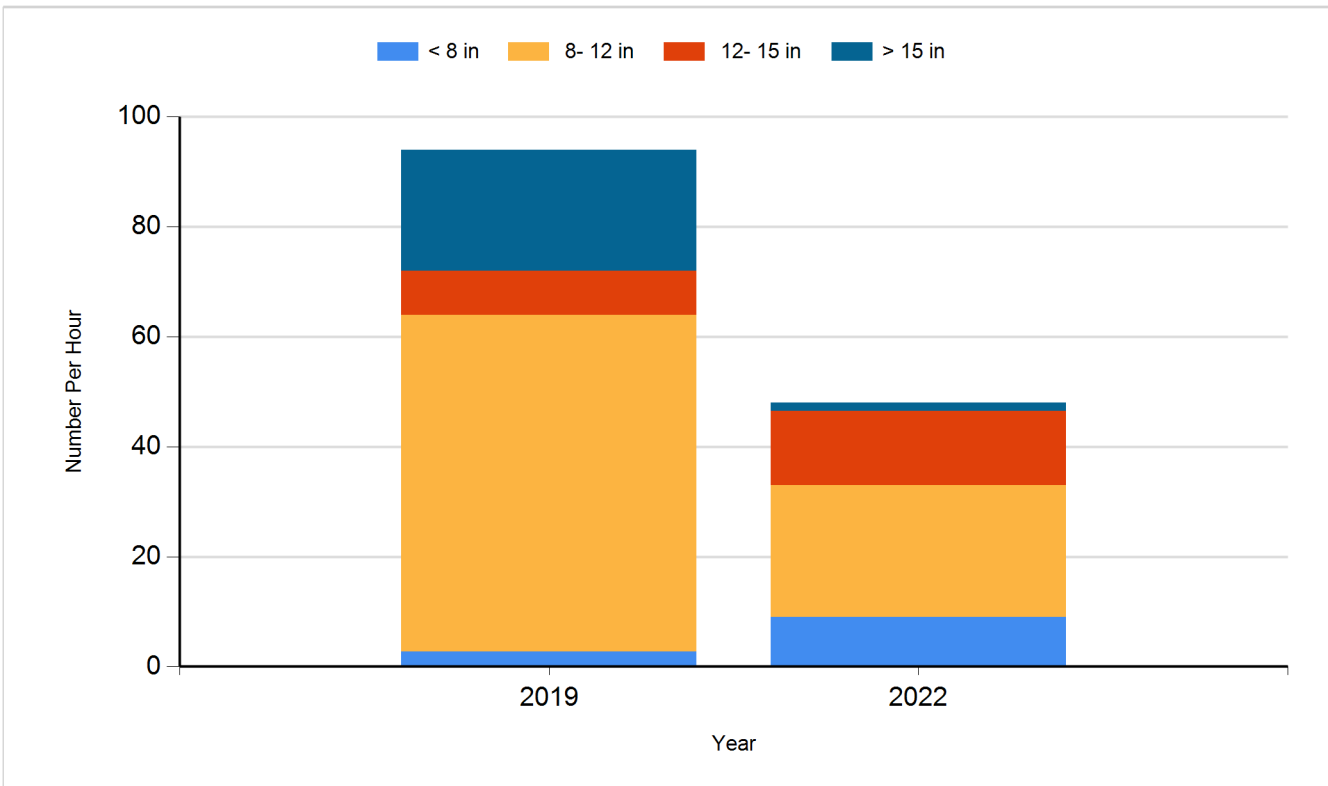


Species: Common Carp  
Gear: AFS std gill net

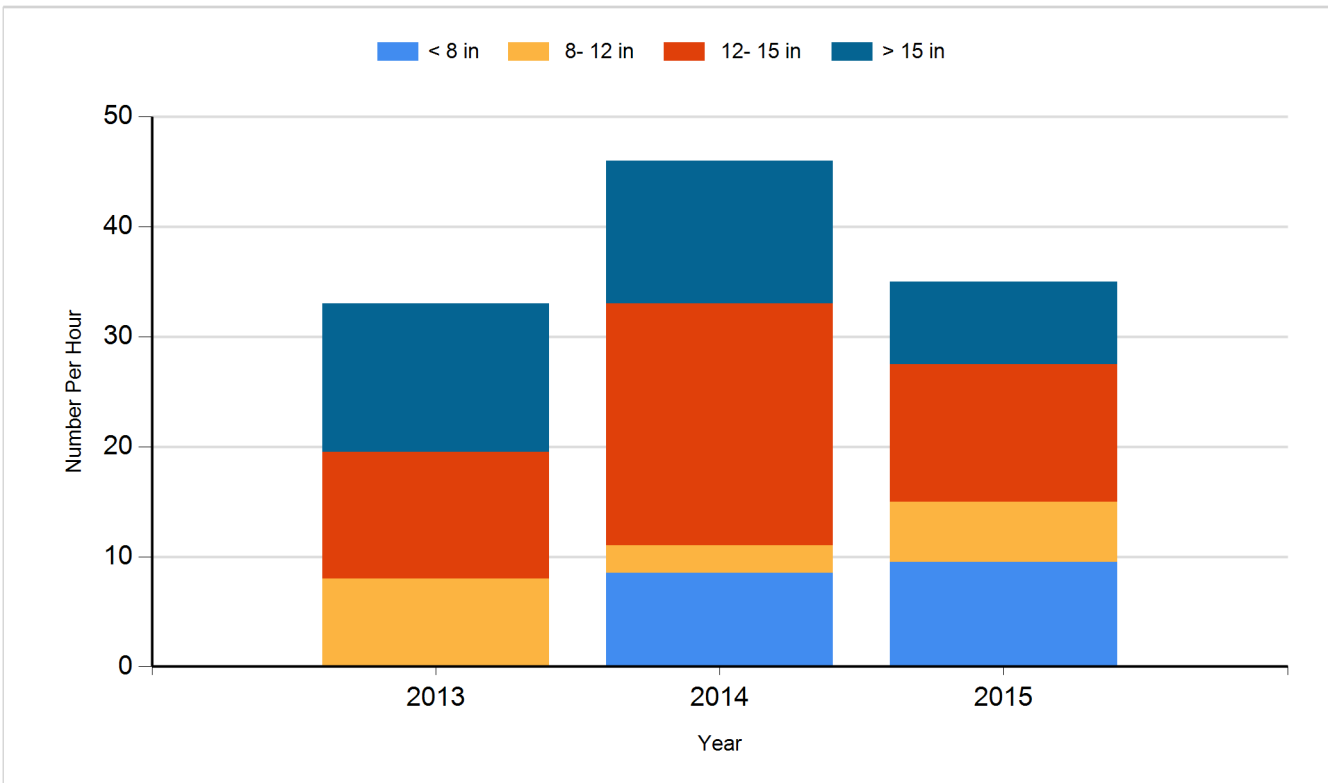




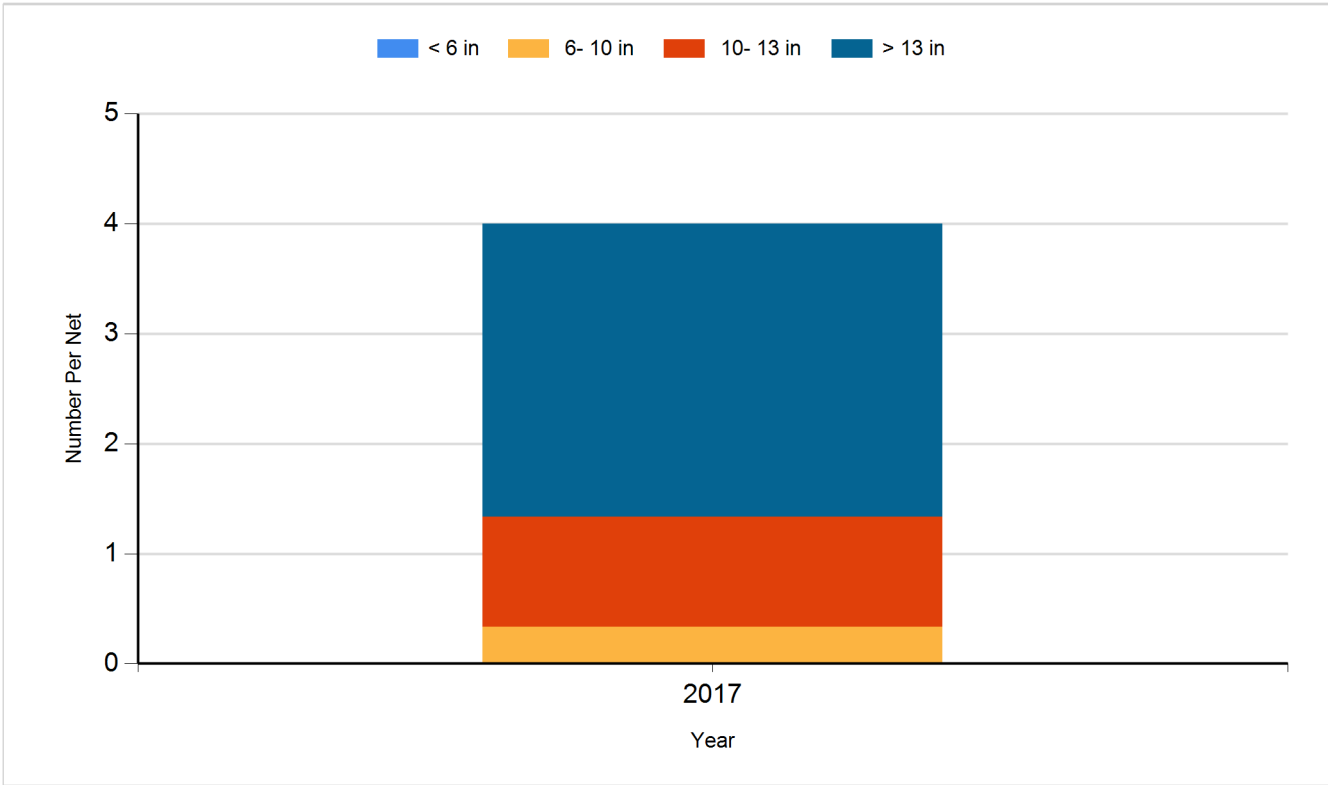
Species: Largemouth Bass  
Gear: boat shocker (day)



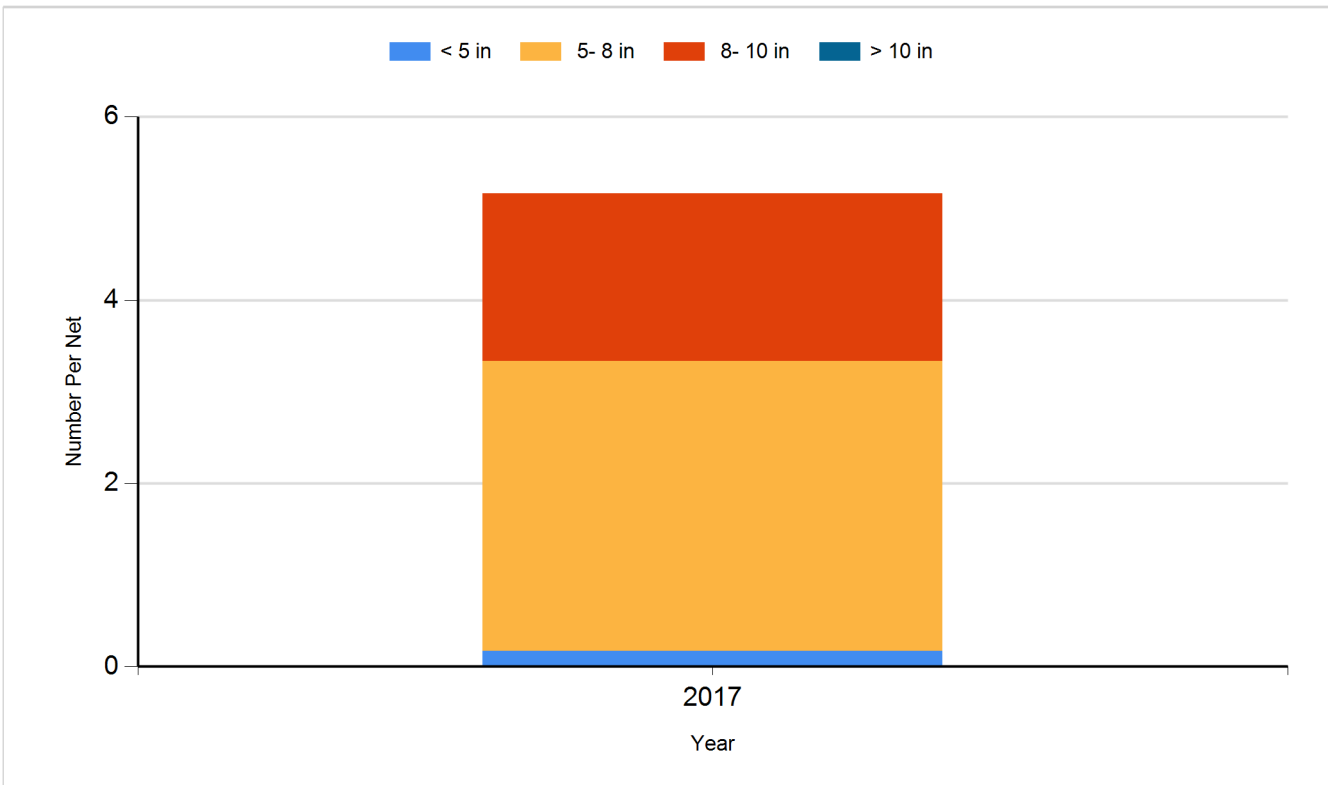
Species: Largemouth Bass  
Gear: boat shocker (night)



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
2011	Yellow Perch	Adult	1,747
2012	Yellow Perch	Adult	1,416
2012	Yellow Perch	Juvenile	7,875
2013	Channel Catfish	Large Fingerling	3,300
2014	Yellow Perch	Small Fingerling	40,820
2015	Largemouth Bass	Fingerling	11,400
2016	Yellow Perch	Adult	5,445