

# SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

Hanson, Hanson County

LJA-Lake-425-000

2019

## Lake Information

**Name:** Hanson **Maximum Depth:** 15 Feet  
**County:** Hanson **Mean Depth:** 6 Feet  
**Legal Description:** T102-R58-Sec. 21  
**Surface Area:** 59 Acres

## Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jun 13, 2019	3 net-nights
frame net (std 3/4 in)	Jun 13, 2019	5 net-nights

## **Common Fish Species Present**

Walleye

Black Bullhead

Bluegill

White Crappie

Channel Catfish

Black Crappie

White Sucker

Green Sunfish

Common Carp

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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
AFS std gill net	Black Bullhead	55	18.3	13.1	0		0		
	Channel Catfish	12	4.0	3.9	0		0	97	3
	Common Carp	18	1.0	1.9	67		0		
	White Sucker	7	2.3	1.7	14		14		
frame net (std 3/4 in)	Black Bullhead	431	78.4	43.9	0		0		
	Black Crappie	19	3.2	2.7	100		100	92	3
	Bluegill	88	17.6	20.6	44	8	0	111	2
	Channel Catfish	11	1.4	0.8	29		0	104	3
	Common Carp	231	0.4	0.4	100		0		
	Green Sunfish	5	1.0	1.0	20		0	113	12
	White Crappie	37	5.6	5.1	100		100	100	1
	White Sucker	2	0.4	0.4	100		0		

## 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.

Gear	Species	CPUE										Avg
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
AFS std frame net	Black Bullhead								113.0			113.0
	Black Crappie								6.6			6.60
	Bluegill								10.2			10.20
	Channel Catfish								0.0			0.00
	Common Carp								0.4			0.40
	Gizzard Shad								6.4			6.40
	Green Sunfish								2.2			2.20
	Largemouth Bass								0.2			0.20
	Walleye								1.6			1.60
	White Crappie								4.8			4.80
White Sucker								0.4			0.40	
AFS std gill net	Black Bullhead								22.0	12.7	18.3	17.67
	Black Crappie								0.0	0.2	0.0	0.07
	Channel Catfish								0.5	7.3	4.0	3.93
	Common Carp								4.0	1.7	1.0	2.23
	Gizzard Shad								3.5	0.0	0.0	1.17
	Northern Pike								1.5	0.0	0.0	0.50
	Walleye								3.5	0.0	0.0	1.17
White Sucker								0.5	0.5	2.3	1.10	
boat shocker (night)	Black Bullhead			165.6								165.6
	Black Crappie			3.6								3.60
	Bluegill			159.6								159.6
	Channel Catfish			0.6								0.60
	Common Carp			51.6								51.60
	Largemouth Bass			12.0								12.00
	Northern Pike			21.6								21.60
	White Crappie			5.4								5.40
Yellow Perch			12.6								12.60	
frame net (std 3/4 in)	Black Bullhead	38.6				30.8	70.4	42.2		148.5	78.4	68.15
	Black Crappie	4.8				1.4	4.4	4.6		1.3	3.2	3.28
	Bluegill	5.0				7.8	2.4	8.0		15.8	17.6	9.43
	Channel Catfish	0.2				0.0	0.0	0.0		0.0	1.4	0.27
	Common Carp	0.8				0.4	0.4	0.0		0.0	0.4	0.33

		CPUE										
Gear	Species	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Avg
frame net (std 3/4 in)	Green Sunfish	0.0				0.0	0.0	0.0		1.3	1.0	0.38
	Largemouth Bass	0.0				0.0	0.0	0.0		0.0	0.0	0.00
	Northern Pike	1.0				0.4	0.6	1.4		0.0	0.0	0.57
	Walleye	0.0				0.0	0.0	0.4		0.3	0.0	0.12
	White Crappie	17.2				1.2	0.6	13.4		0.5	5.6	6.42
	White Sucker	0.0				0.0	0.0	0.2		0.0	0.4	0.10
	Yellow Perch	0.4				0.0	0.8	0.0		0.0	0.0	0.20
std exp gill net	Black Bullhead					2.0	0.0	5.3				2.43
	Black Crappie					0.0	1.3	1.0				0.77
	Bluegill					0.7	0.0	0.0				0.23
	Channel Catfish					0.3	0.7	0.3				0.43
	Common Carp					2.0	3.3	10.3				5.20
	Northern Pike					1.7	4.0	2.0				2.57
	White Crappie					0.0	0.3	1.0				0.43
	White Sucker					0.3	0.3	0.0				0.20

## 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											
			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019		
AFS std frame net	Black Bullhead	PSD									0			
		PSD-P									0			
	Black Crappie	PSD									76			
		PSD-P									9			
		Wr									85			
	Bluegill	PSD									78			
		PSD-P									0			
		Wr									93			
	Channel Catfish	PSD									0			
		PSD-P									0			
	Common Carp	PSD									50			
		PSD-P									0			
	Green Sunfish	PSD									27			
		PSD-P									0			
	Walleye	PSD									0			
		PSD-P									0			
		Wr									79			
	White Crappie	PSD									75			
		PSD-P									4			
		Wr									81			
White Sucker	PSD									100				
	PSD-P									100				
AFS std gill net	Black Bullhead	PSD									0	0	0	
		PSD-P									0	0	0	
	Black Crappie	PSD										100		
		PSD-P										0		
		Wr										84		
	Channel Catfish	PSD									0	2	0	
		PSD-P									0	0	0	
		Wr									99	95	97	
	Common Carp	PSD									13	10	67	
		PSD-P									0	0	0	
	Walleye	PSD									29			



Gear	Species	Index	Year										
			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
AFS std gill net	Walleye	PSD-P									0		
		Wr									84		
	White Sucker	PSD									100	100	14
		PSD-P									100	100	14
boat shocker (night)	Black Bullhead	PSD			2								
		PSD-P			0								
		Wr			92								
	Black Crappie	PSD			50								
		PSD-P			17								
		Wr			108								
	Bluegill	PSD			15								
		PSD-P			0								
		Wr			111								
	Channel Catfish	PSD			100								
		PSD-P			0								
		Wr			100								
	Common Carp	PSD			58								
		PSD-P			5								
		Wr			96								
	White Crappie	PSD			22								
		PSD-P			11								
		Wr			112								
frame net (std 3/4 in)	Black Bullhead	PSD	12					0	14	0		0	0
		PSD-P	0					0	0	0		0	0
		Wr	72										
	Black Crappie	PSD	38					14	41	9		100	100
		PSD-P	29					14	18	9		100	100
		Wr	93					87	89	96		79	92
	Bluegill	PSD	40					15	8	65		29	44
		PSD-P	0					0	0	0		0	0
		Wr	92					96	94	108		102	111
	Channel Catfish	PSD	100						0	0		0	29
		PSD-P	100						0	0		0	0
		Wr	91										104
Common Carp	PSD	75					0	50				100	
	PSD-P	0					0	50				0	

Gear	Species	Index	Year											
			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019		
frame net (std 3/4 in)	Common Carp	Wr	87											
	Green Sunfish	PSD										20	20	
		PSD-P										0	0	
		Wr										84	113	
	Walleye	PSD									0		100	
		PSD-P									0		0	
		Wr									86		82	
	White Crappie	PSD	16					83	67	3			100	100
		PSD-P	14					83	33	1			100	100
		Wr	86					74	86	103			83	100
	White Sucker	PSD										100		100
		PSD-P										100		0
	std exp gill net	Black Bullhead	PSD					50	0	0				
			PSD-P					17	0	0				
		Black Crappie	PSD							0	0			
PSD-P									0	0				
Wr									83	92				
Bluegill		PSD					50							
		PSD-P					0							
		Wr					103							
Channel Catfish		PSD					100	100	0					
		PSD-P					0	100	0					
		Wr					88	88	85					
Common Carp		PSD					0	30	6					
		PSD-P					0	0	0					
White Crappie		PSD							0	0				
		PSD-P							0	0				
		Wr							91	95				
White Sucker		PSD					0	100						
		PSD-P					0	100						

## **Fish Condition**

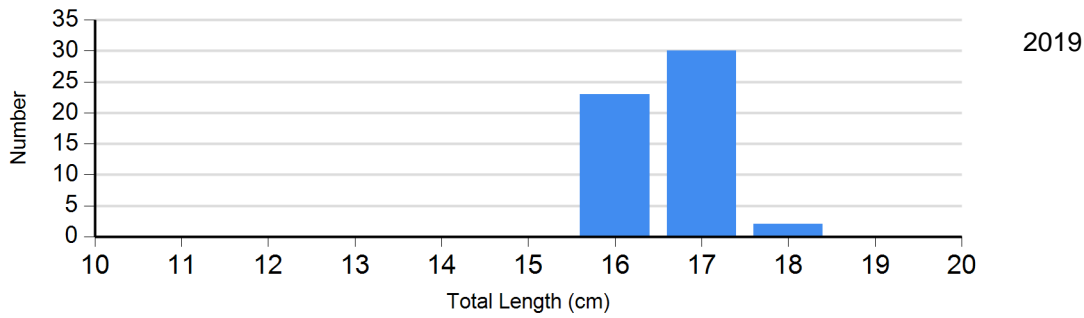
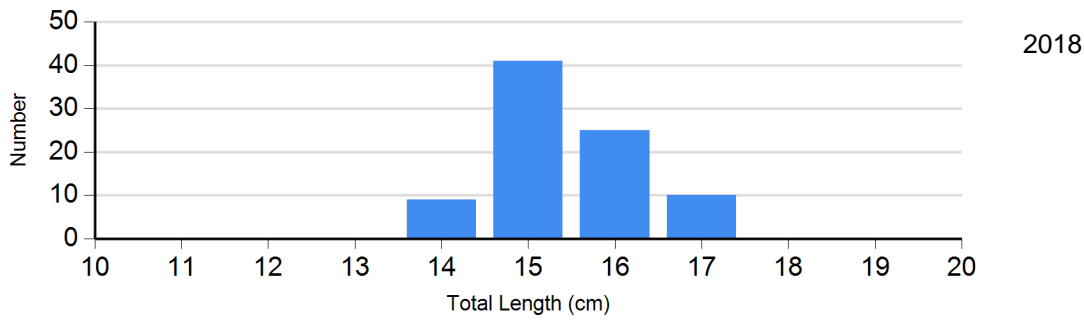
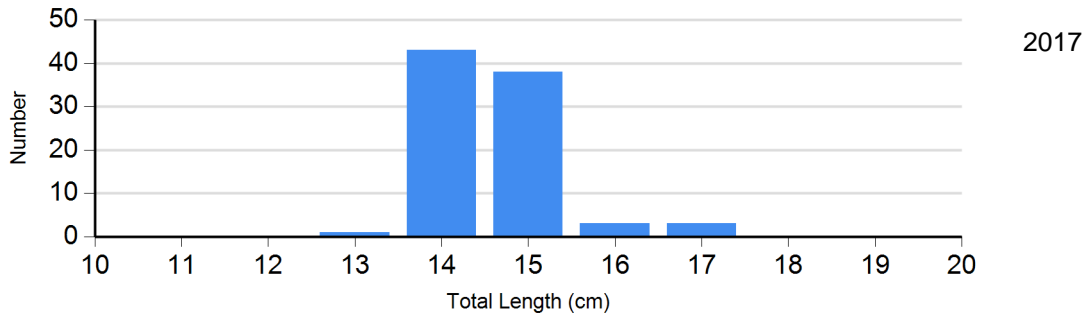
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

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	2015	13	92 (1.3)	5	87 (3.4)	2	83 (1.8)	2	76 (1.7)
	2016	21	98 (1.3)	0		1	64	1	73
	2017	8	89 (1.4)	22	84 (0.9)	1	74	2	84 (0.0)
	2018	0		0		3	80 (3.1)	2	78 (1.8)
	2019	0		0		4	98 (8.4)	12	89 (1.9)
Bluegill Frame Net	2015	11	94 (3.3)	1	92	0		0	
	2016	14	112 (2.5)	26	106 (2.1)	0		0	
	2017	11	99 (2.0)	40	91 (2.0)	0		0	
	2018	45	106 (2.0)	18	91 (1.7)	0		0	
	2019	49	117 (2.5)	39	105 (1.5)	0		0	
Channel Catfish Gill Net	2015	0		0		2	88 (0.5)	0	
	2016	1	85	0		0		0	
	2017	1	99	0		0		0	
	2018	43	95 (1.1)	1	95	0		0	
	2019	12	97 (2.4)	0		0		0	
Walleye Gill Net	2017	5	83 (1.8)	2	86 (2.0)	0		0	
White Crappie Frame Net	2015	1	84	1	86	0		1	88
	2016	65	101 (0.9)	1	237	0		1	79
	2017	6	85 (2.9)	17	79 (1.3)	0		1	85
	2018	0		0		2	83 (0.8)	0	
	2019	0		0		3	104 (5.0)	25	99 (0.9)

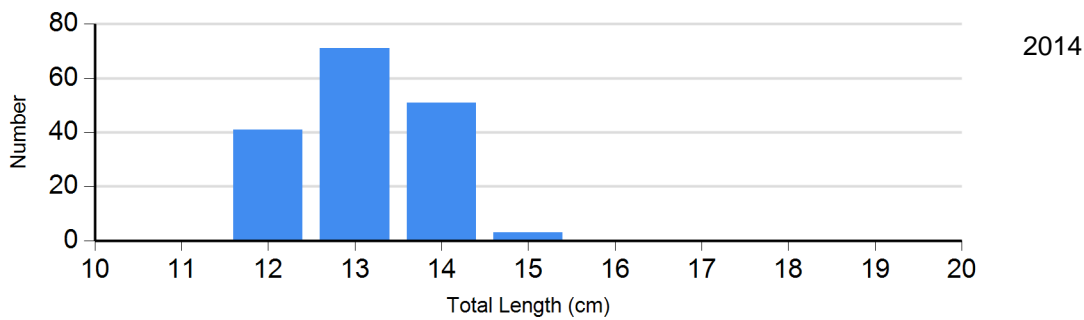
## Length Frequency Distribution

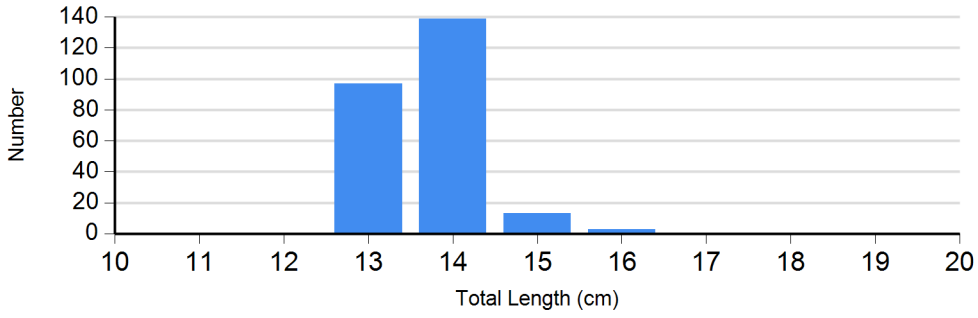
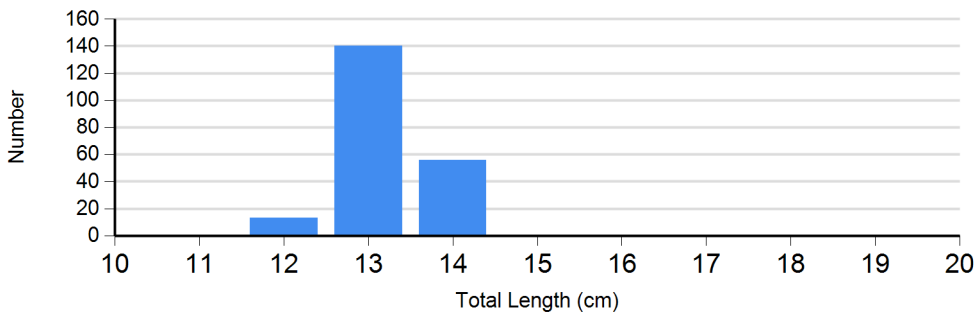
Length frequency histogram of species sampled by year.

Species: Black Bullhead  
Gear: AFS std gill net

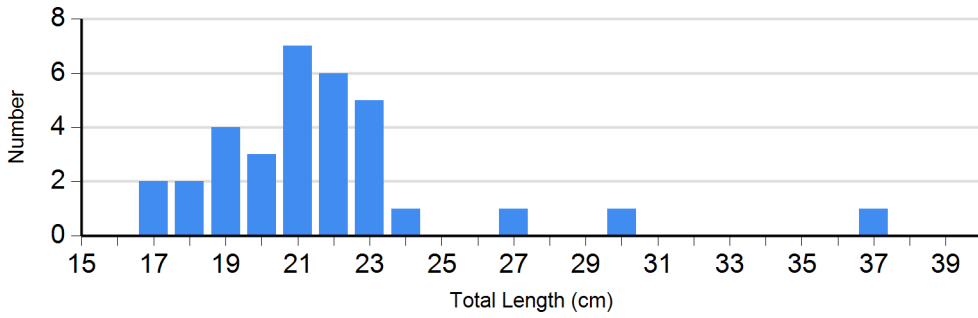


Species: Black Bullhead  
Gear: std exp gill net

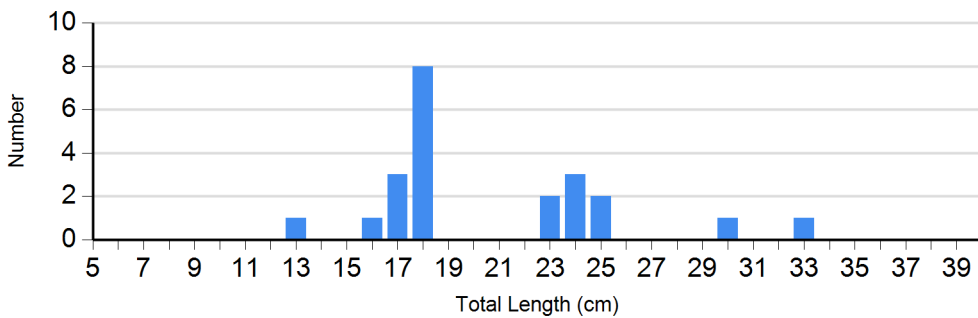
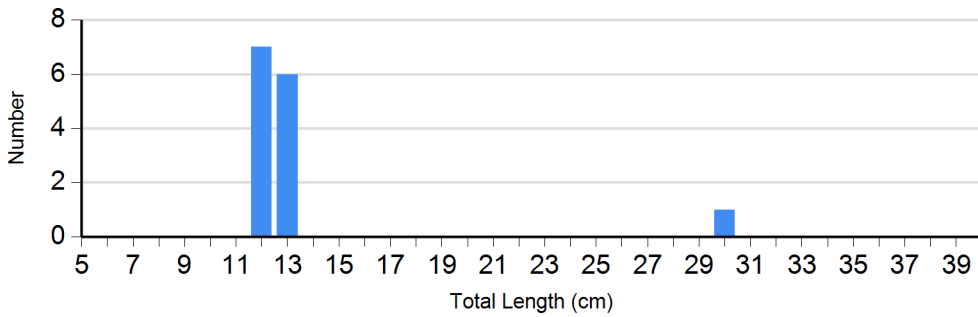


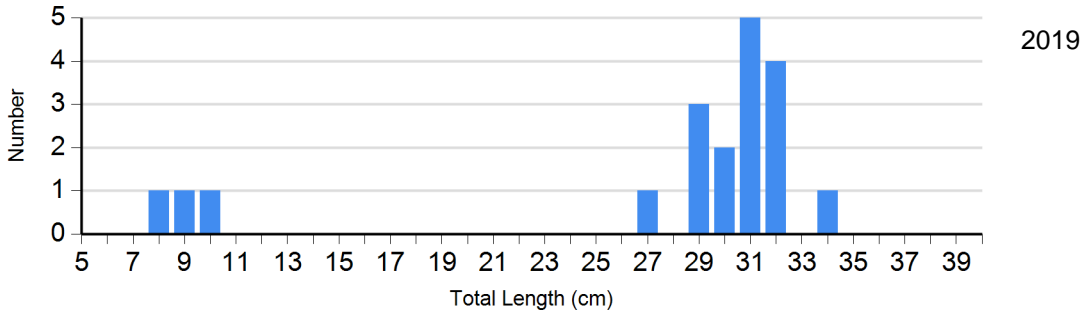
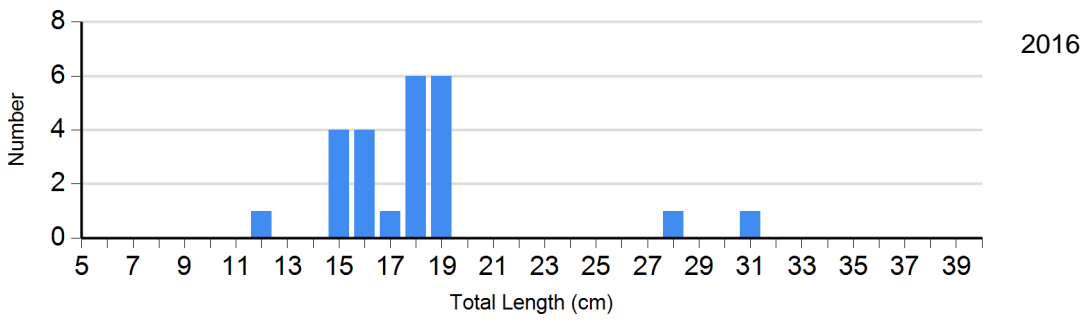


Species: Black Crappie  
Gear: AFS std frame net

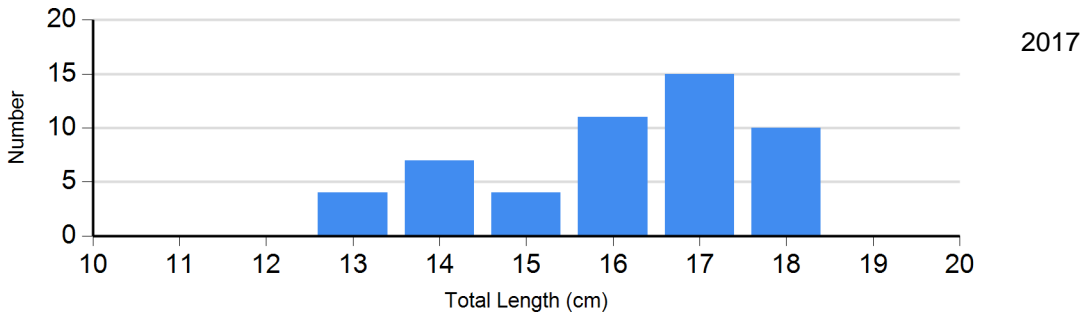


Species: Black Crappie  
Gear: frame net (std 3/4 in)

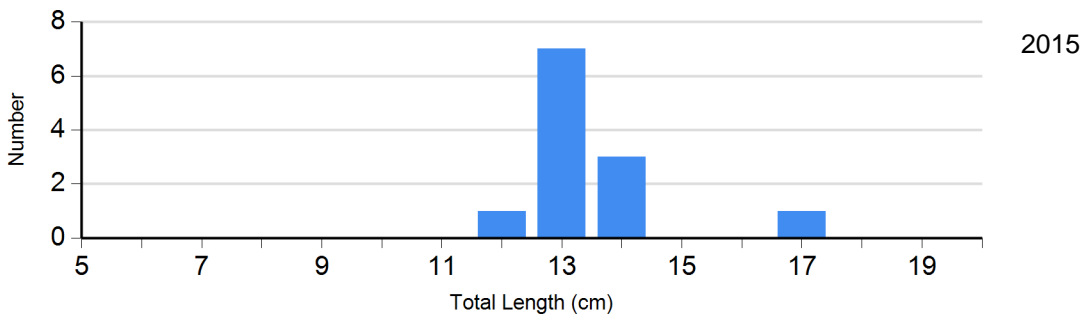
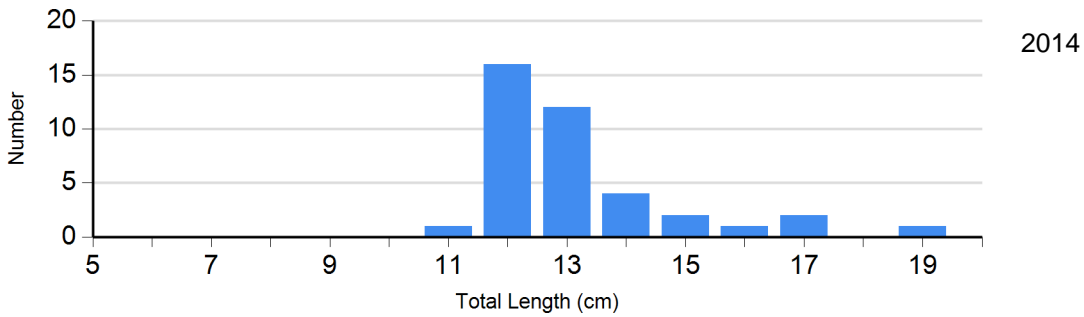


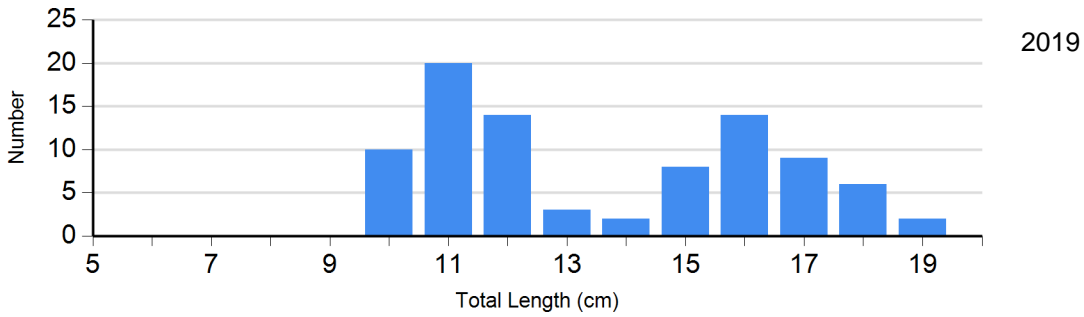
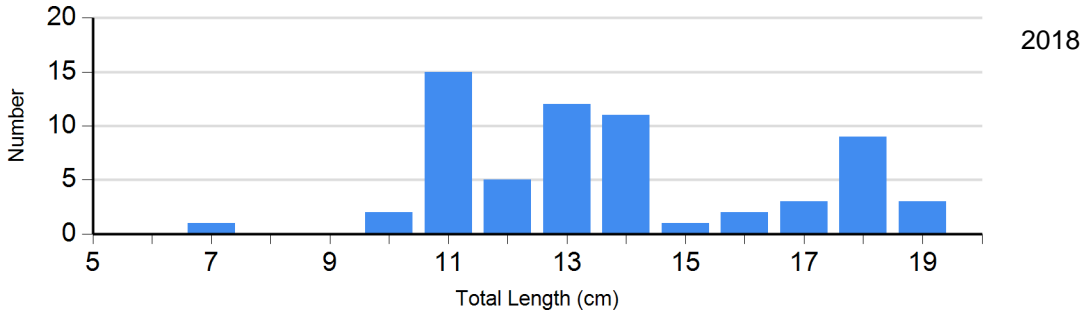
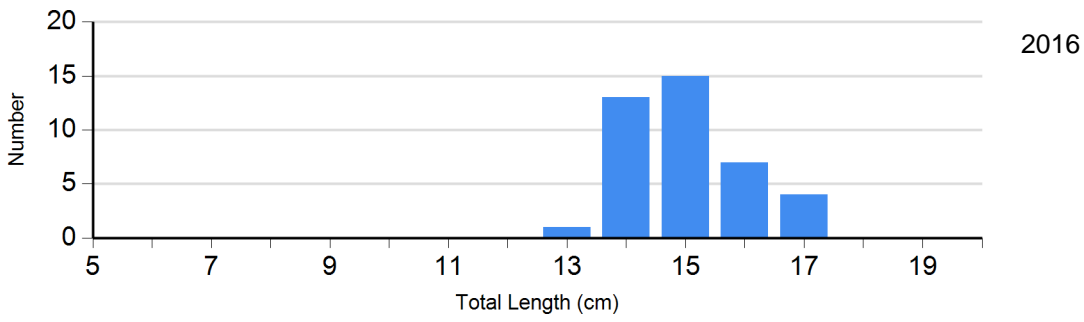


Species: Bluegill  
Gear: AFS std frame net

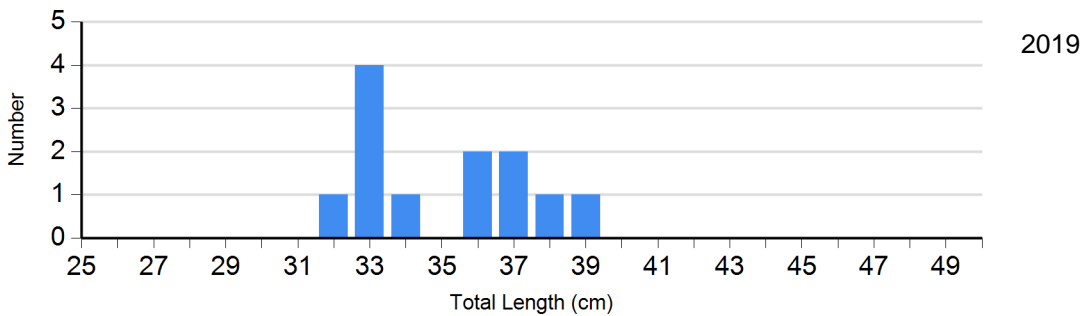
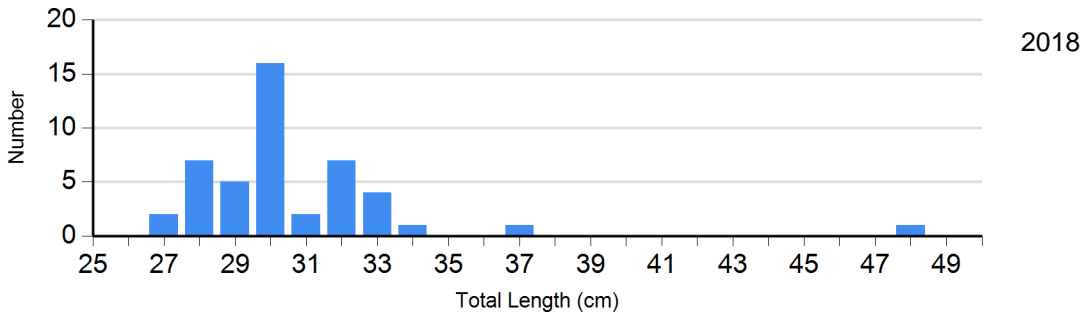


Species: Bluegill  
Gear: frame net (std 3/4 in)

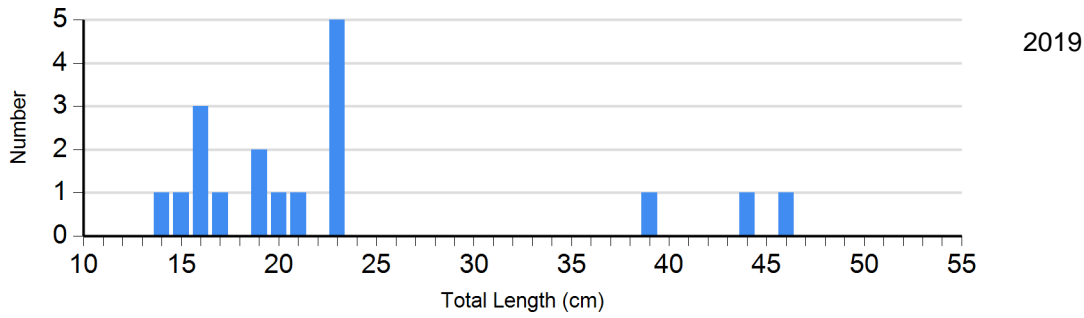
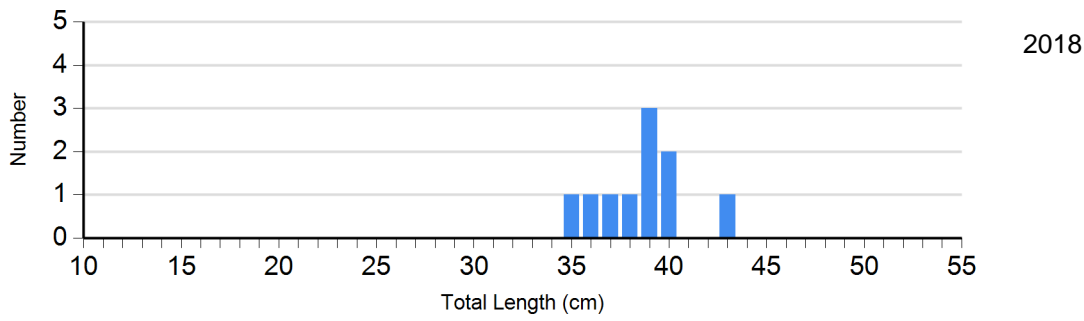




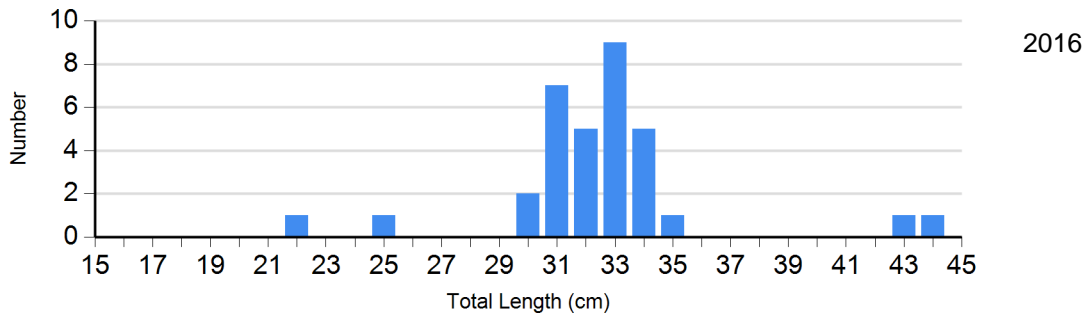
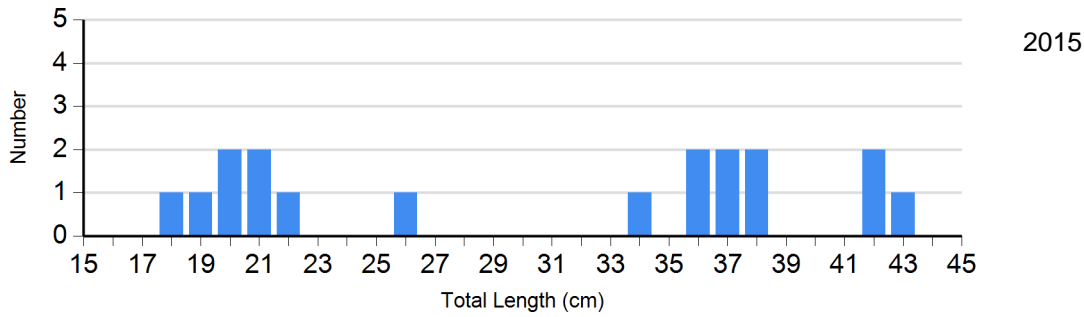
Species: Channel Catfish  
 Gear: AFS std gill net



Species: Common Carp  
Gear: AFS std gill net

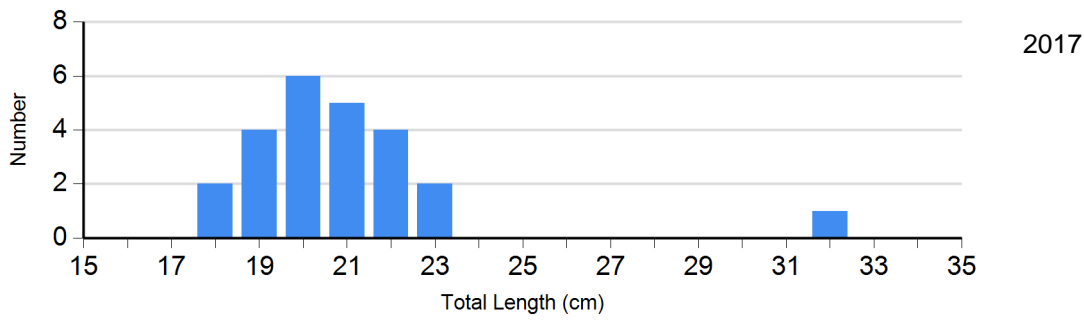


Species: Common Carp  
Gear: std exp gill net

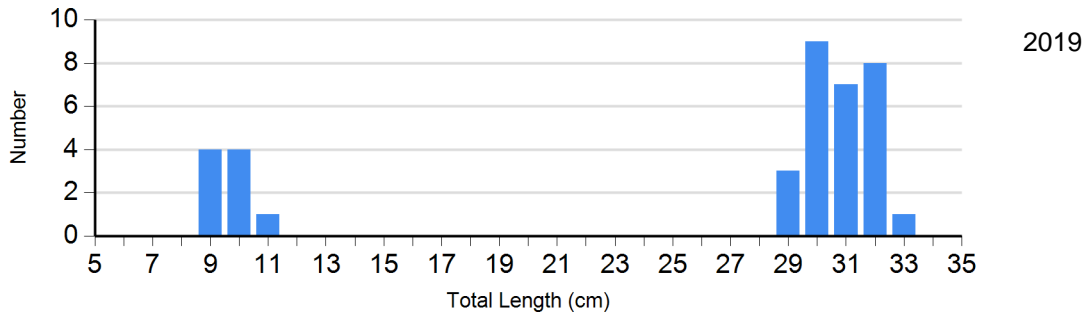
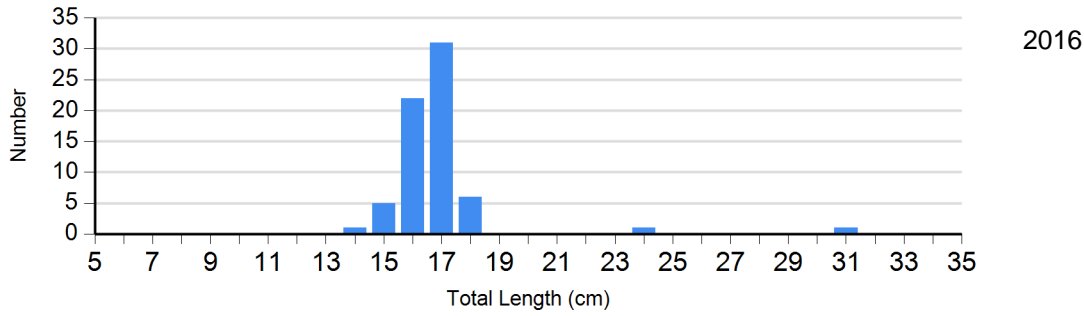




Species: White Crappie  
Gear: AFS std frame net



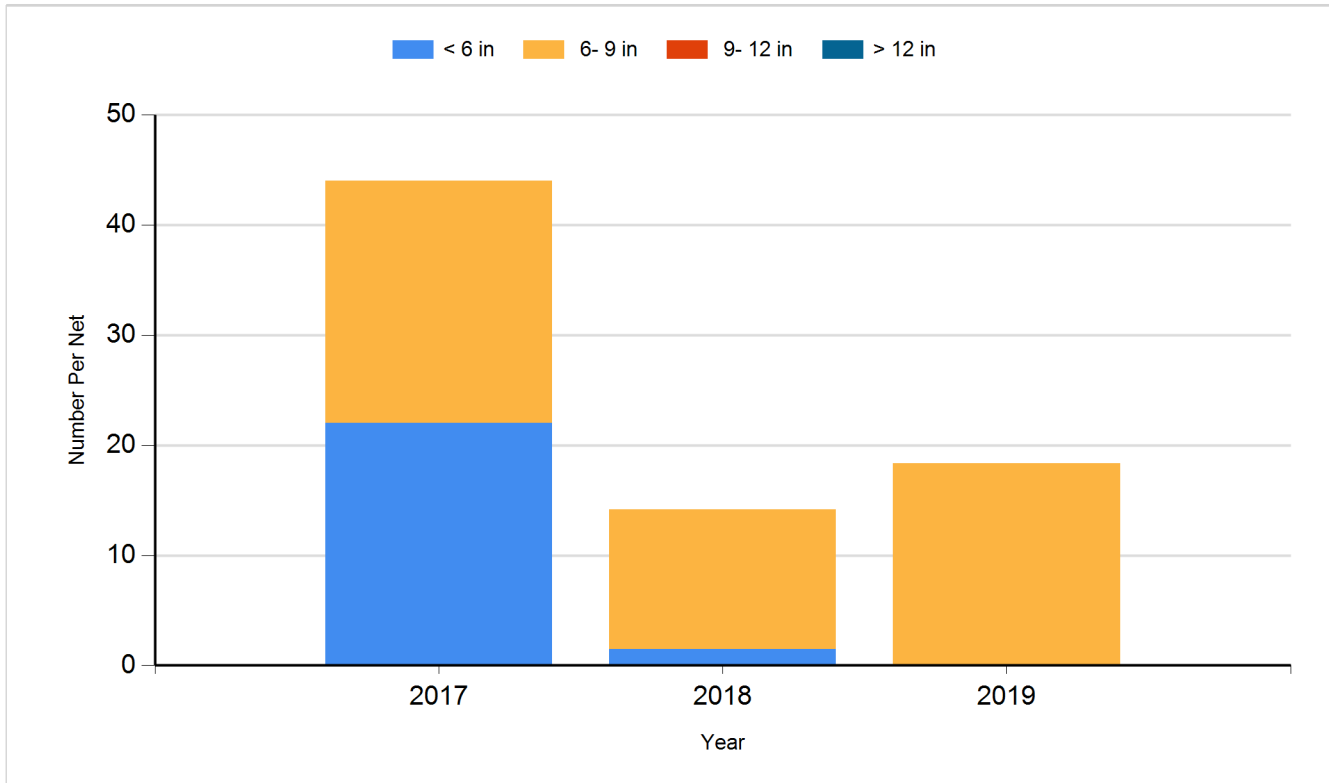
Species: White Crappie  
Gear: frame net (std 3/4 in)



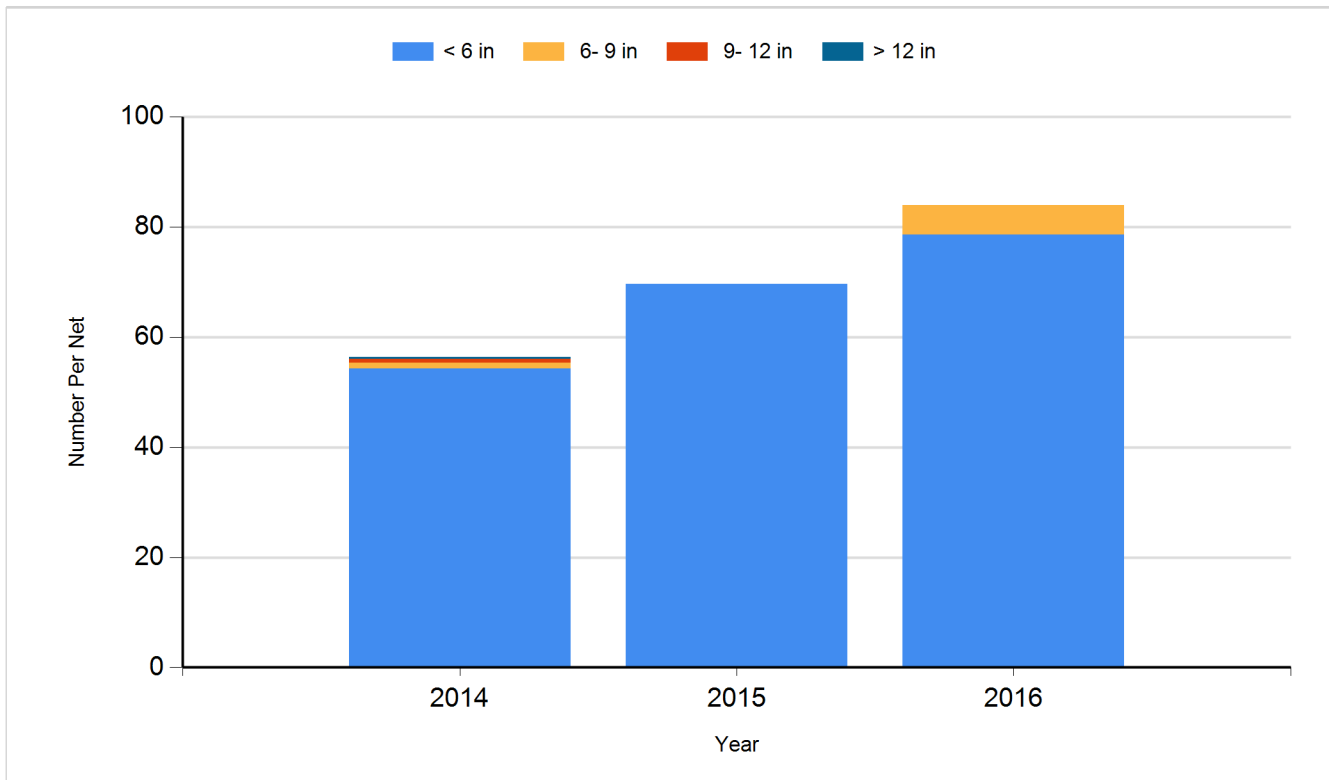
## Historic Fish Sizes and Relative Abundance

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

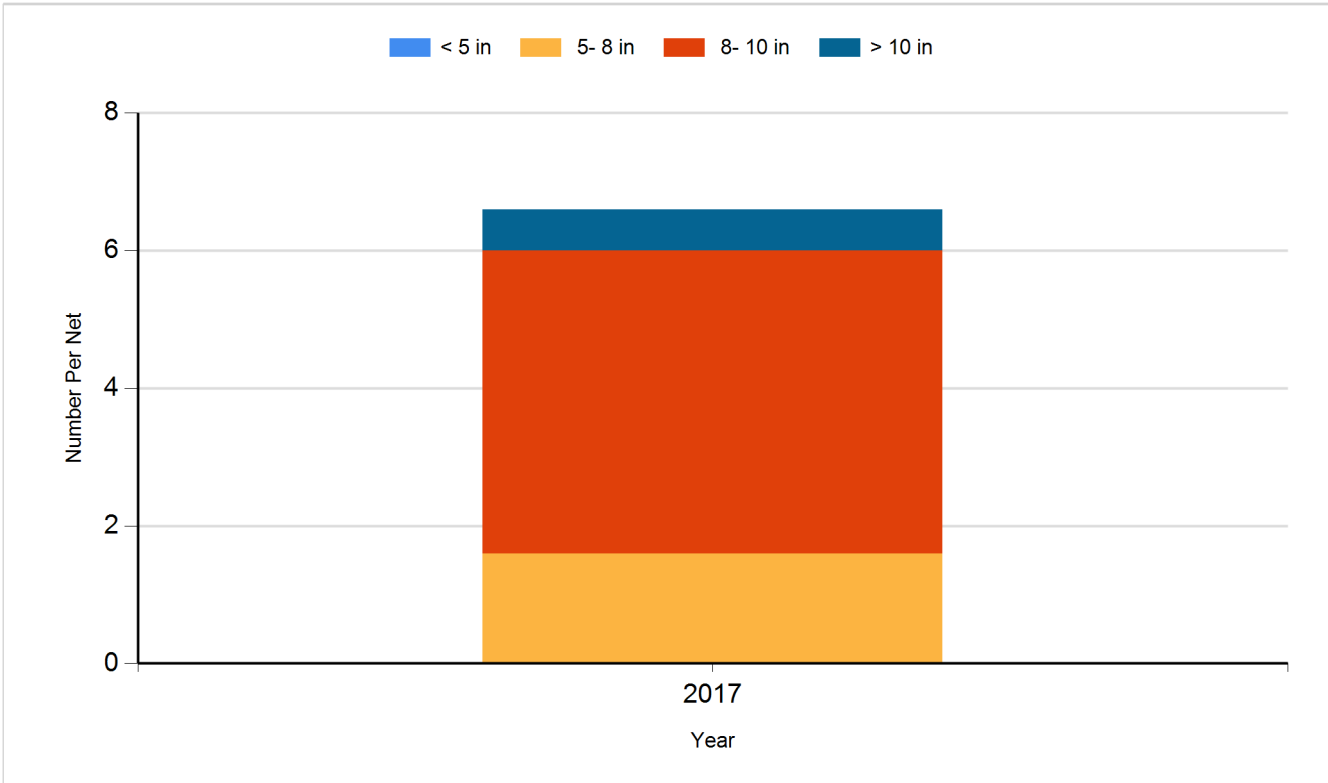
Species: Black Bullhead  
Gear: AFS std gill net



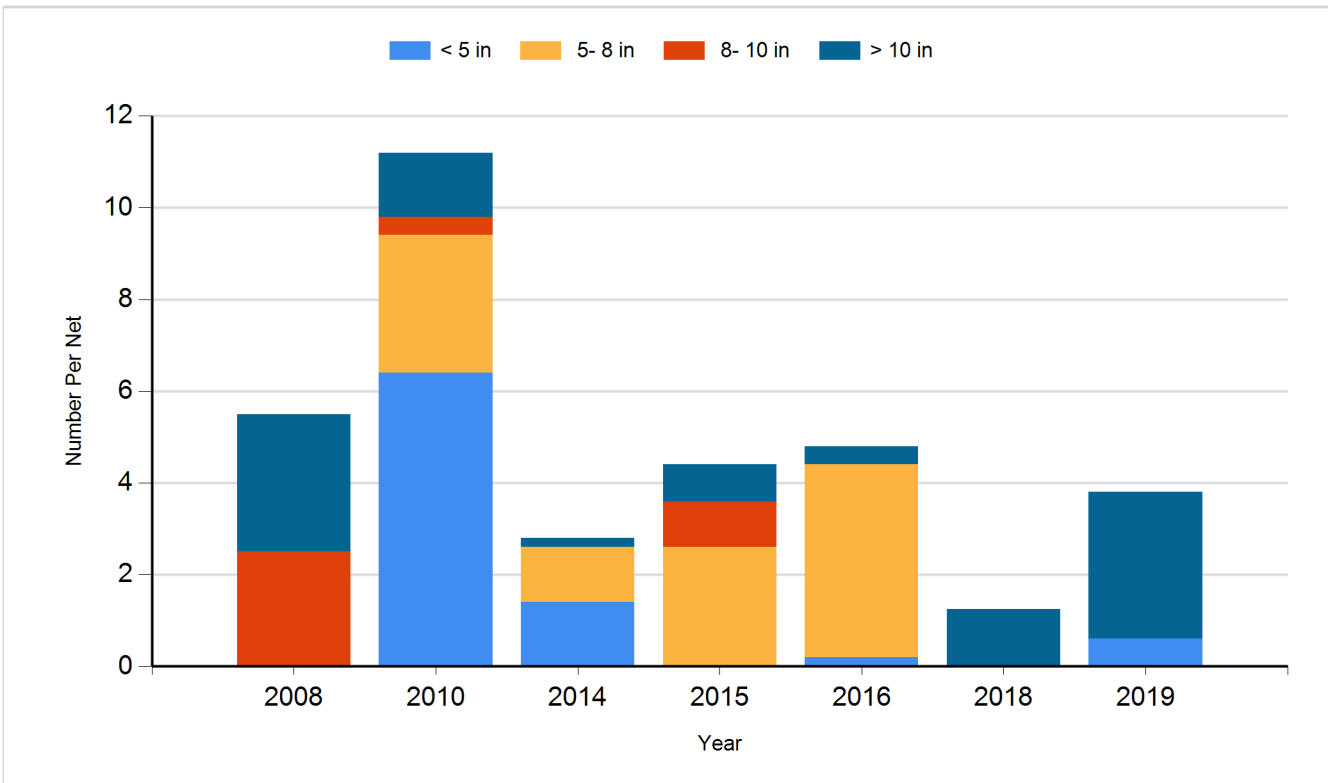
Species: Black Bullhead  
Gear: std exp gill net



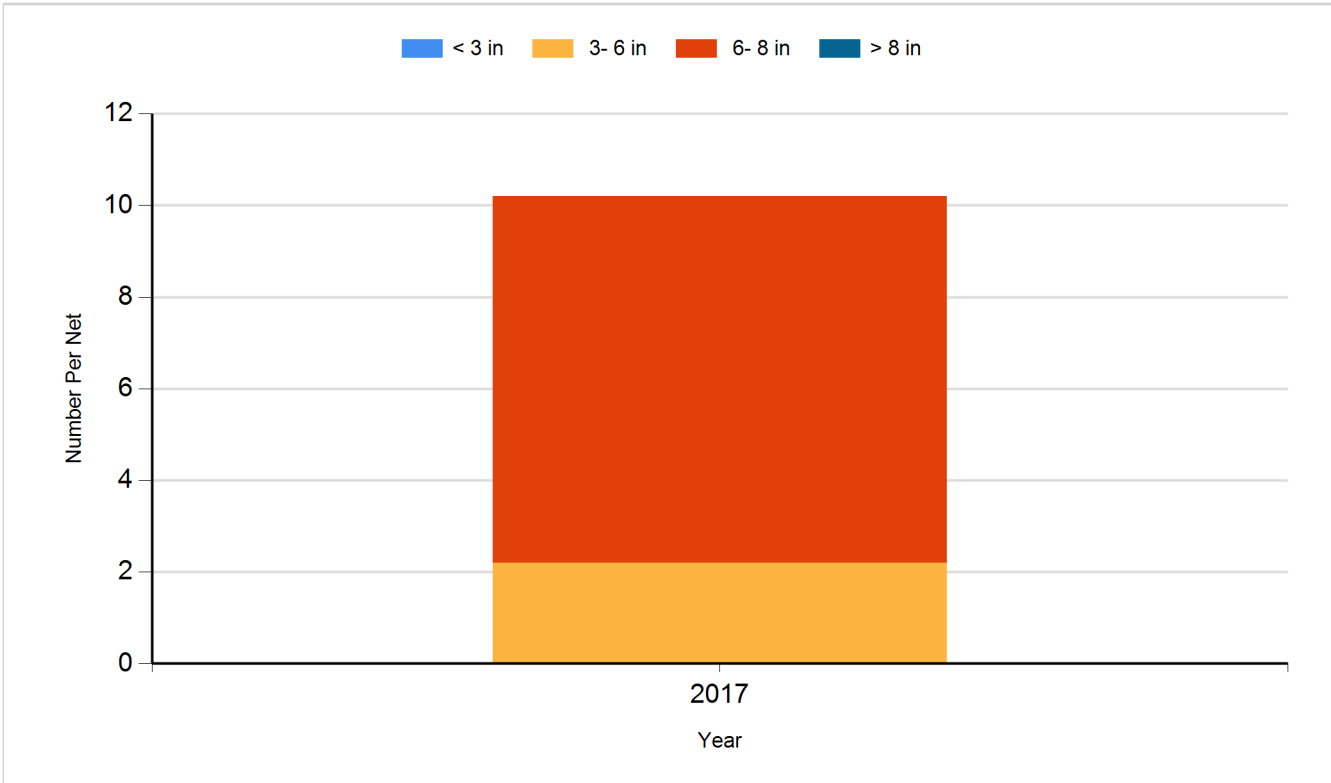
Species: Black Crappie  
Gear: AFS std frame net



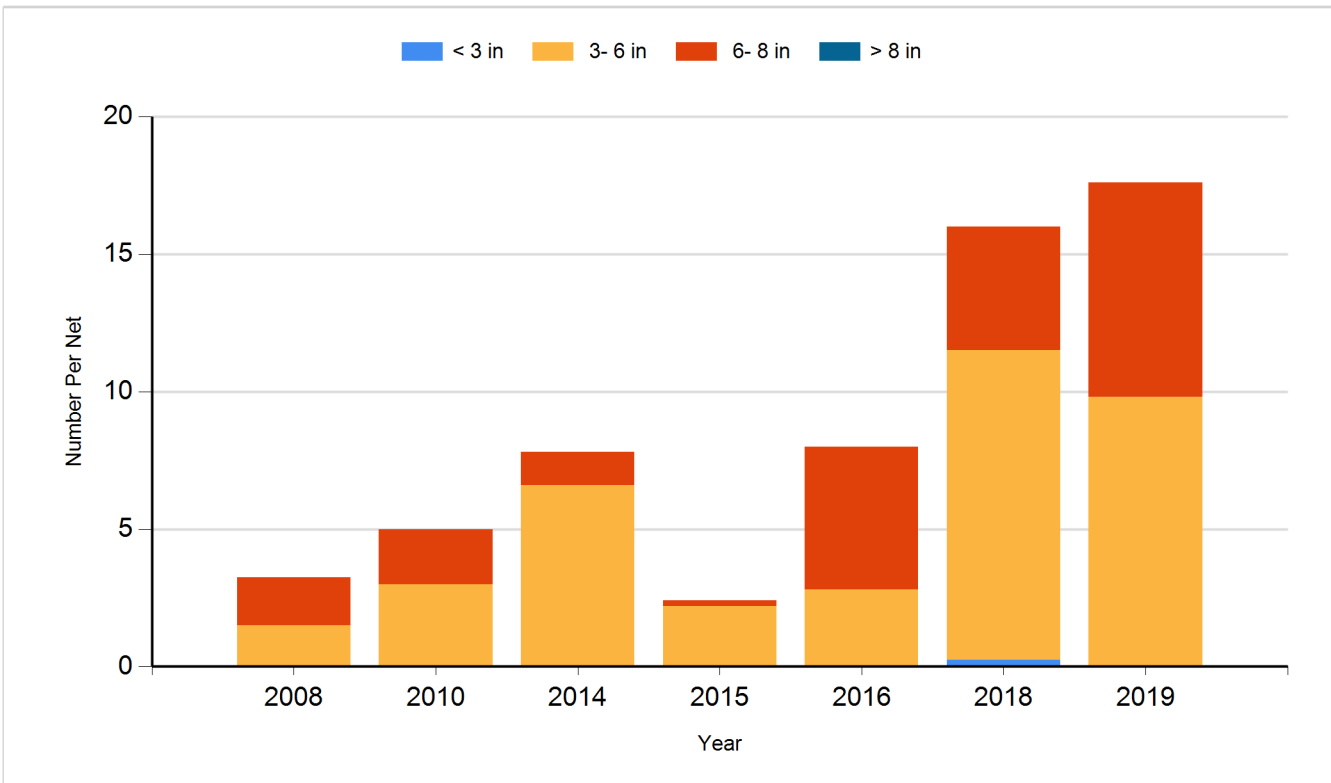
Species: Black Crappie  
Gear: frame net (std 3/4 in)



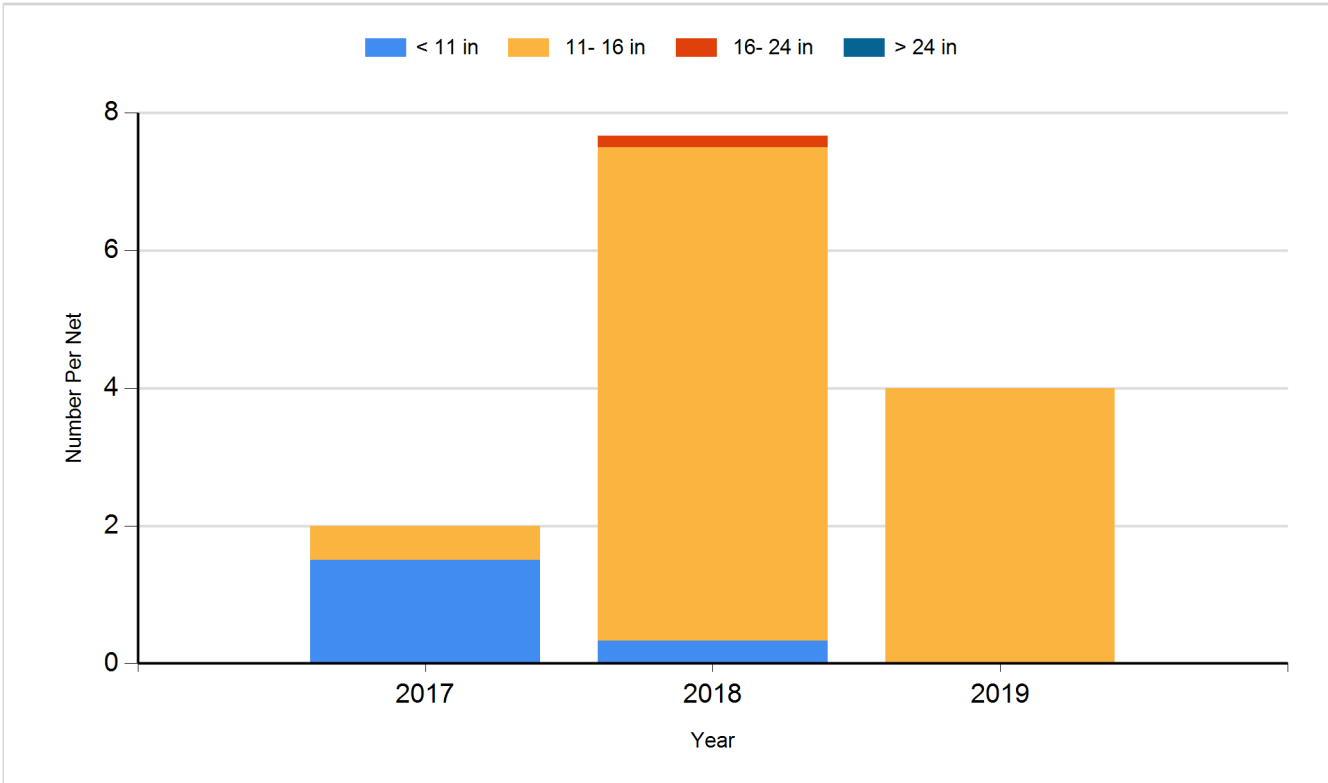
Species: Bluegill  
Gear: AFS std frame net



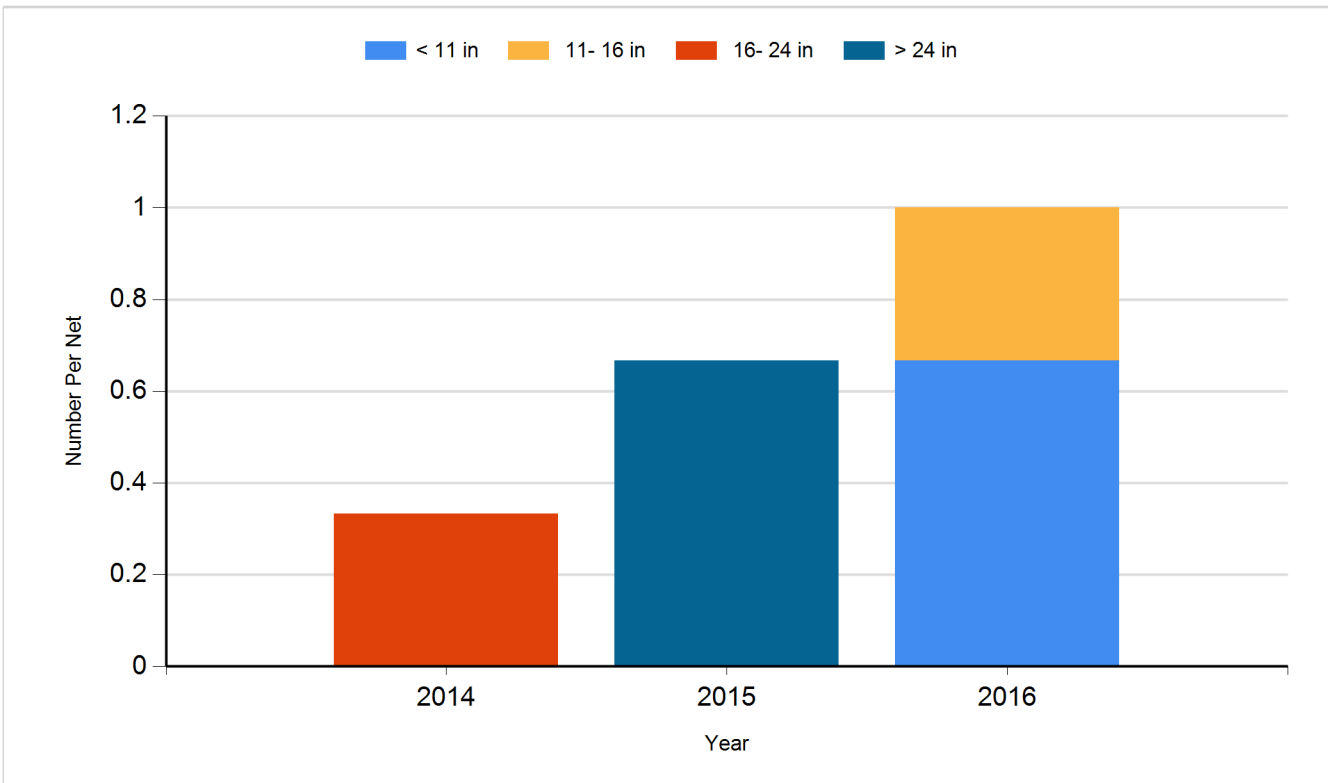
Species: Bluegill  
Gear: frame net (std 3/4 in)



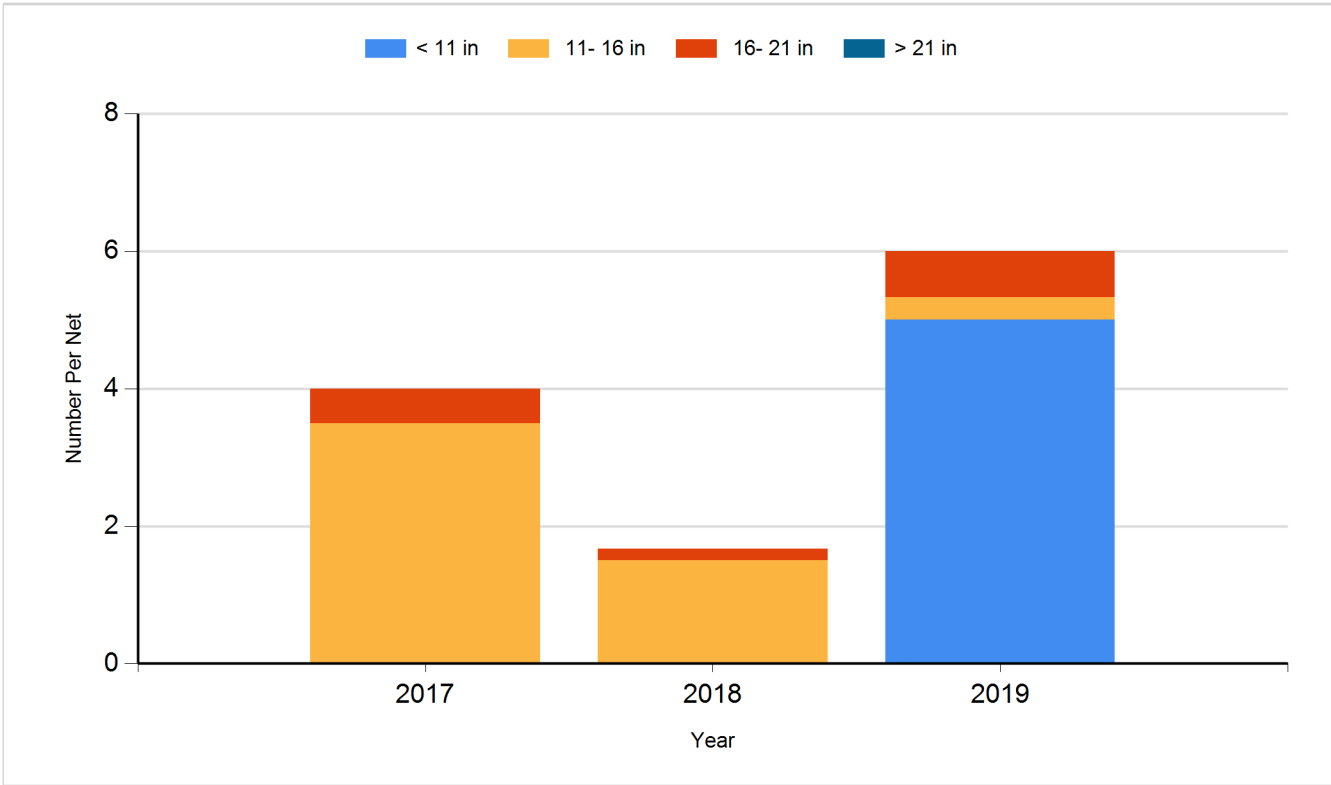
Species: Channel Catfish  
Gear: AFS std gill net



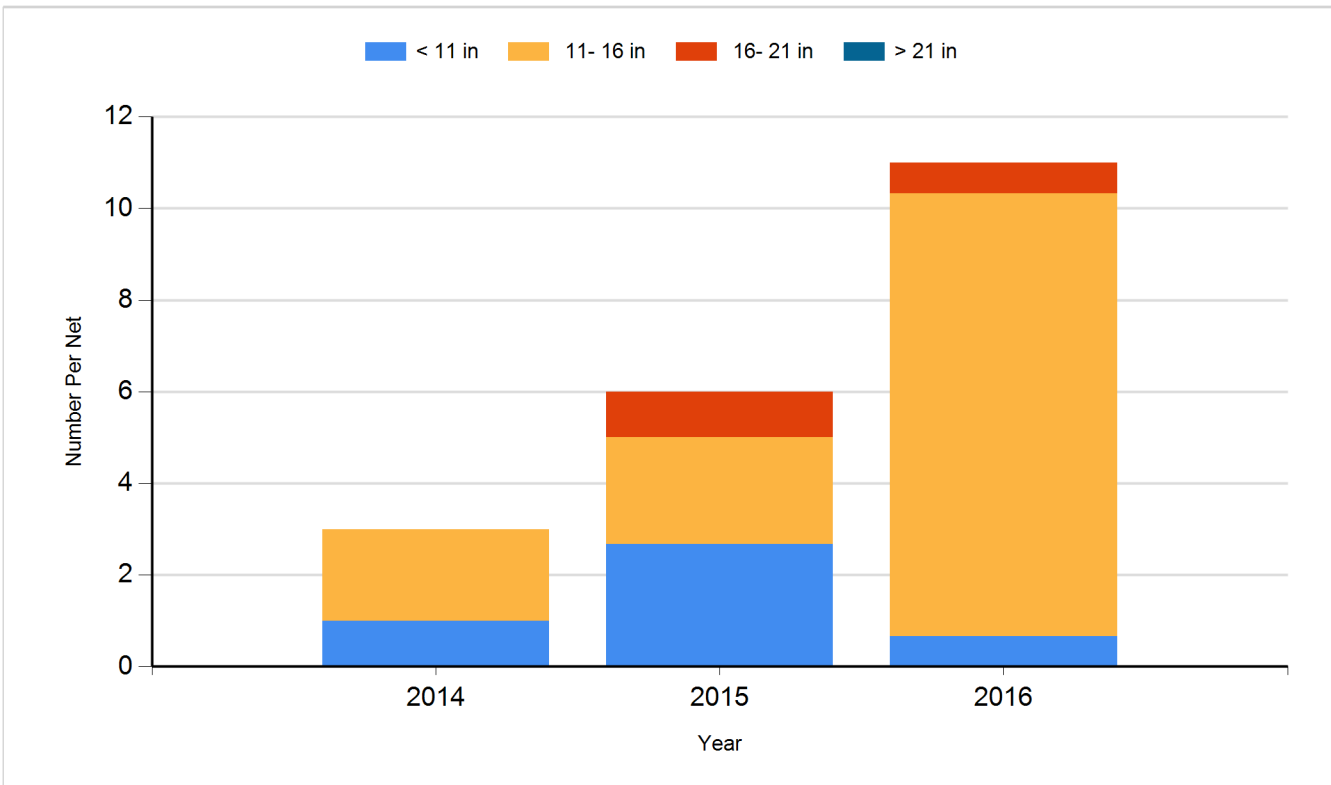
Species: Channel Catfish  
Gear: std exp gill net



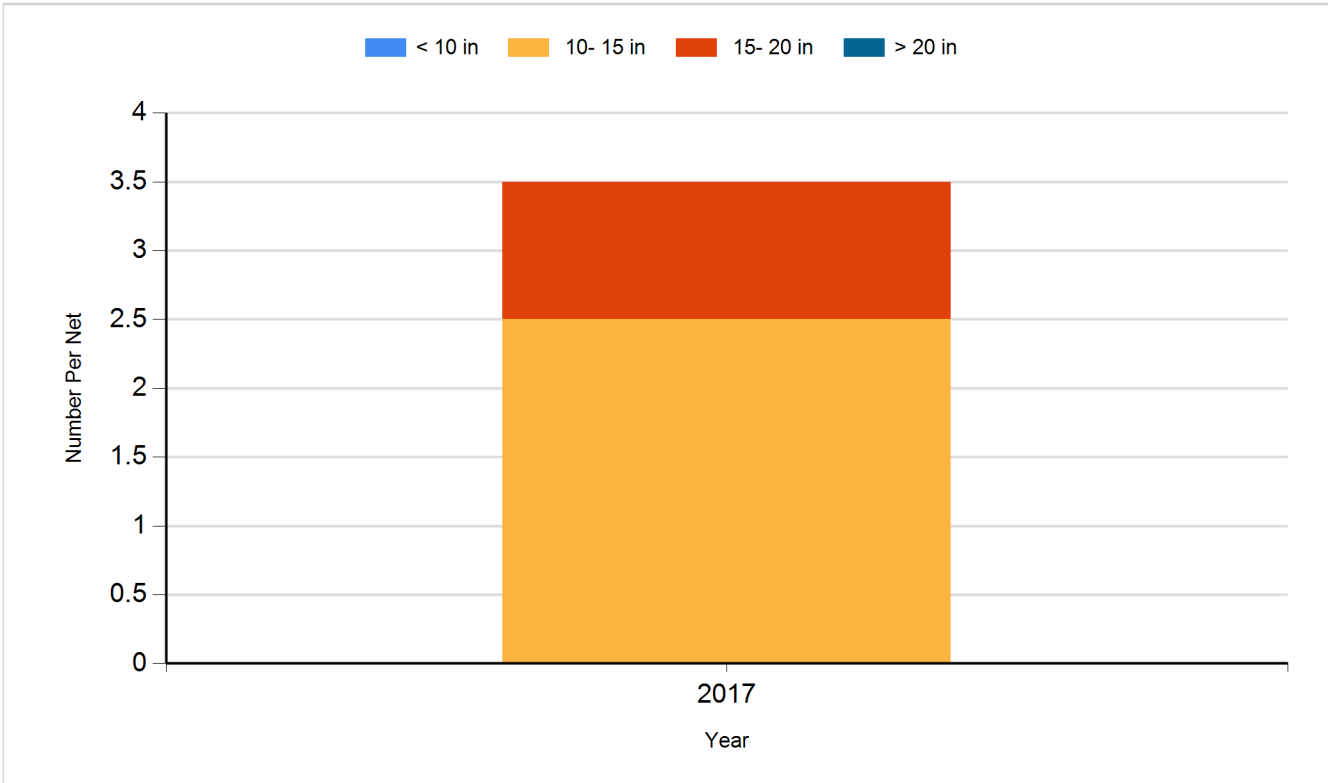
Species: Common Carp  
Gear: AFS std gill net



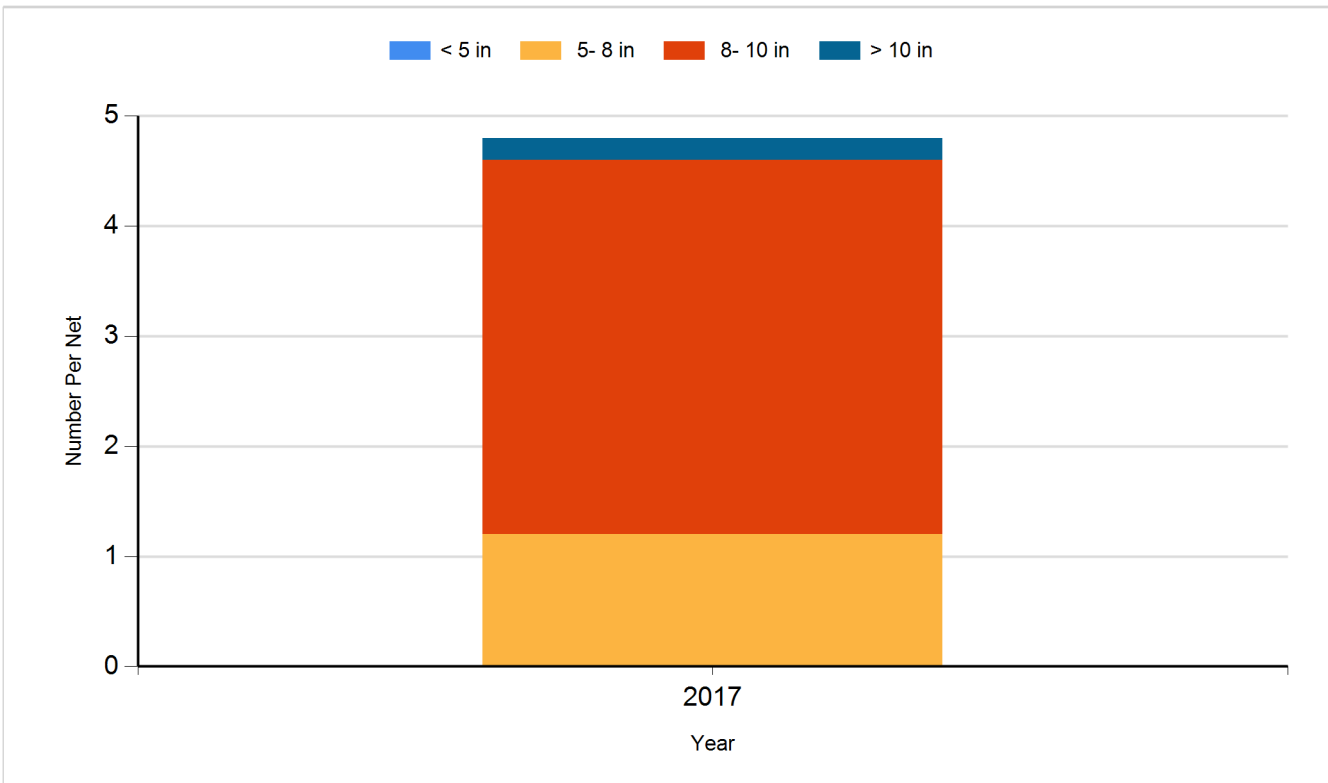
Species: Common Carp  
Gear: std exp gill net



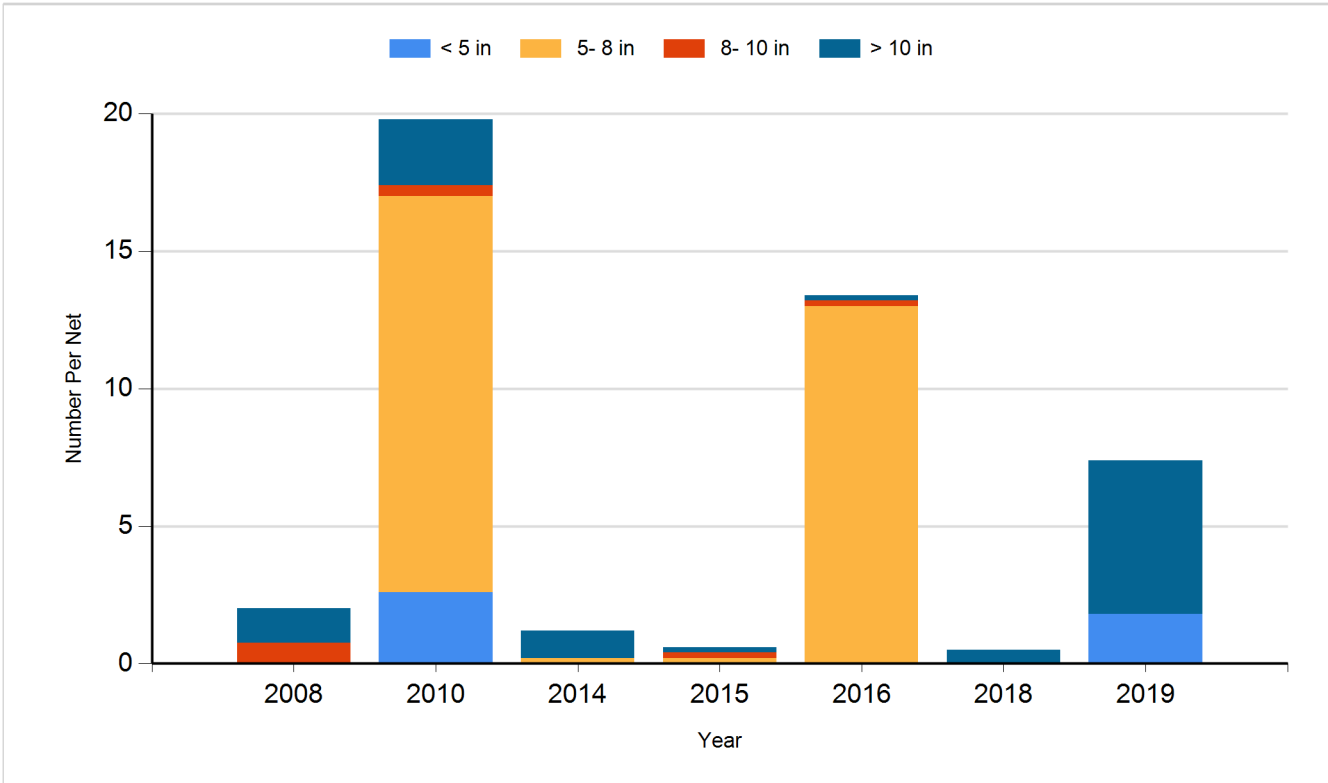
Species: Walleye  
Gear: AFS std gill net



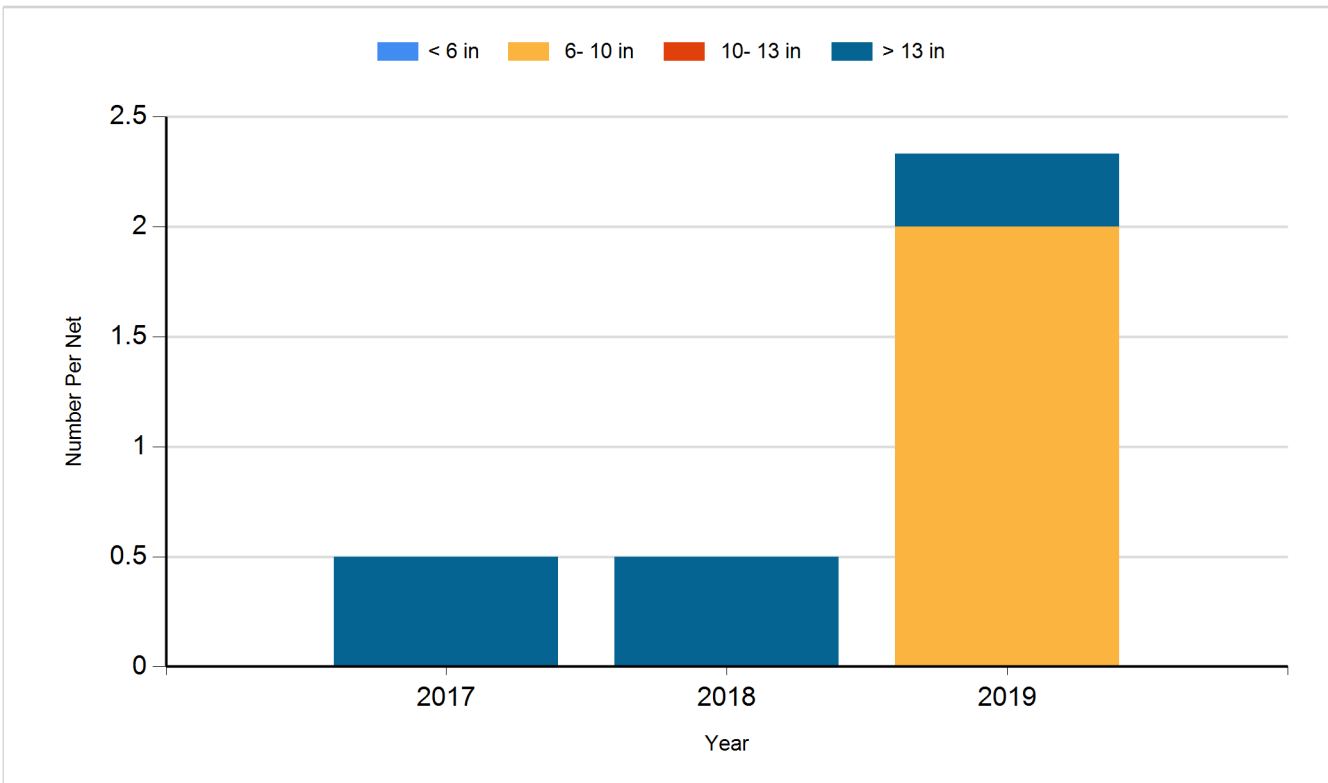
Species: White Crappie  
Gear: AFS std frame net



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

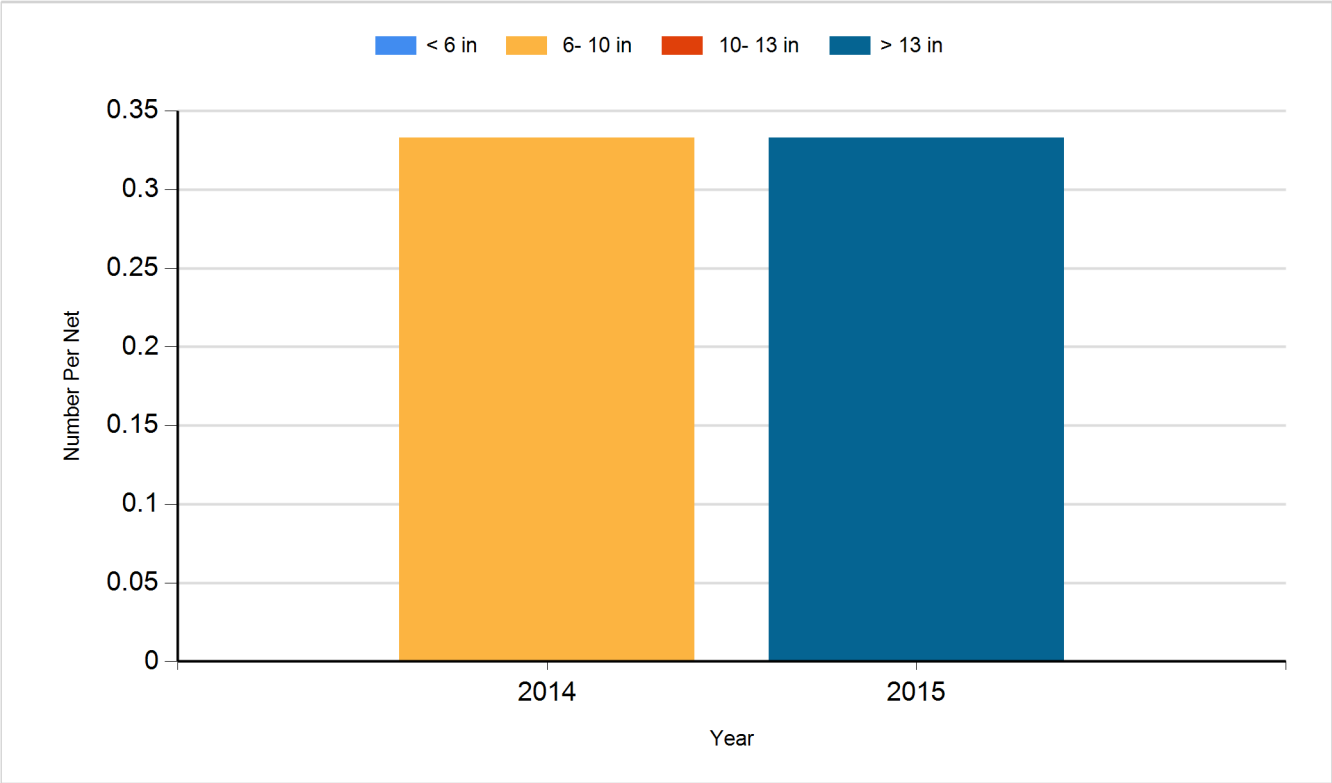


Species: White Sucker  
Gear: AFS std gill net





Species: White Sucker  
Gear: std exp gill net



## **Fish Stocking**

Number of fish stocked by year, species, and size.

Year	Species	Size	Number
2008	Bluegill	Fingerling	22,900
2008	Largemouth Bass	Fingerling	6,560
2014	Walleye	Fry	55,000
2015	Walleye	Small Fingerling	3,840
2016	Gizzard Shad	Adult	130
2016	Walleye	Juvenile	505
2019	Walleye	Small Fingerling	4,900