

**SOUTH DAKOTA STATEWIDE FISHERIES SURVEY**  
**New Wall, Pennington County**  
**MCE-Lake-9-000**  
**2019**

**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
AFS std gill net	Jun 25, 2019	2 net-nights
boat shocker (night)	Sep 25, 2019	3300 seconds
frame net (std 3/4 in)	Jun 25, 2019	8 net-nights

## **Common Fish Species Present**

Bluegill

Black Crappie

Northern Pike

Largemouth Bass

Yellow Perch

White Crappie

Golden Shiner

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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
AFS std gill net	Black Crappie	1	0.5	1.5	0		0		86	
	Golden Shiner	1	0.0	0.0						
	Largemouth Bass	1	0.5	1.5	100		100		99	
	Northern Pike	2	1.0	0.0	100		100		102	8
	Yellow Perch	4	2.0	3.1	0		0		75	29
boat shocker (night)	Largemouth Bass	107	82.0	17.4	71	8	33	8	106	1
frame net (std 3/4 in)	Black Crappie	169	17.9	8.2	15	4	1		91	1
	Bluegill	274	34.3	6.3	60	4	0		94	1
	Largemouth Bass	1	0.0	0.0	0		0			
	Northern Pike	1	0.1	0.2	100		100		108	
	White Crappie	10	1.3	1.2	80		80		94	3
	Yellow Perch	133	16.5	6.7	34	6	3		89	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.

Gear	Species	CPUE										Avg
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
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 (night)	Largemouth Bass	76.4	43.0	247.9	121.3	97.2	91.5	107.0	169.5	71.0	82.0	110.68
frame net (std 3/4 in)	Black Bullhead		0.0		0.0		0.0	0.0		0.0	0.0	0.00
	Black Crappie		3.0		45.0		27.0	8.1		13.2	17.9	19.03
	Bluegill		9.0		88.8		65.5	26.9		10.3	34.3	39.13
	Golden Shiner		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	0.00
	Northern Pike		0.1		0.4		0.8	0.5		0.0	0.1	0.32
	White Crappie		0.1		4.6		0.9	1.6		0.0	1.3	1.42
	Yellow Perch		7.1		4.0		3.9	1.9		1.2	16.5	5.77
std exp gill net	Black Crappie		25.0		22.0		1.5					16.17
	Bluegill		0.0		8.0		5.5					4.50
	Golden Shiner		0.0		0.0		0.0					0.00
	Largemouth Bass		0.0		1.0		0.0					0.33
	Northern Pike		4.0		3.0		1.5					2.83
	White Crappie		5.0		0.0		0.0					1.67
	Yellow Perch		136.0		13.0		0.5					49.83

## 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 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 (night)	Largemouth Bass	PSD	18	33	69	44	72	87	71	58	70	71		
		PSD-P	10	12	9	22	47	51	28	30	32	33		
		Wr	105	102	113	116	113	101	107	106	100	106		
frame net (std 3/4 in)	Black Crappie	PSD		54		9		6	25		10	15		
		PSD-P		0		1		0	4		1	1		
		Wr		113		95		104	101		91	91		
	Bluegill	PSD		88		25		23	42		47	60		
		PSD-P		3		0		1	0		0	0		
		Wr												

Gear	Species	Index	Year										
			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
frame net (std 3/4 in)	Bluegill	Wr		114		96		105	114		90	94	
		Largemouth Bass	PSD						0			0	
			PSD-P						0			0	
	Northern Pike	PSD		100		100		50	80			100	
		PSD-P		100		67		33	0			100	
		Wr		125		99		92	96			108	
	White Crappie	PSD		100		100		100	100			80	
		PSD-P		0		97		29	88			80	
		Wr		93		93		89	88			94	
	Yellow Perch	PSD		53		59		13	26		71	34	
		PSD-P		0		6		0	5		0	3	
		Wr		93		79		92	89		78	89	
	std exp gill net	Black Crappie	PSD		32		0		0				
			PSD-P		0		0		0				
			Wr		122		95		100				
Bluegill		PSD				0		73					
		PSD-P				0		0					
		Wr				91		97					
Largemouth Bass		PSD				0							
		PSD-P				0							
		Wr				108							
Northern Pike		PSD		25		100		100					
		PSD-P		25		33		100					
		Wr		102		108		102					
White Crappie		PSD		100									
		PSD-P		0									
		Wr		112									
Yellow Perch	PSD		25		0		0						
	PSD-P		0		0		0						
	Wr		99		85		92						



## 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+
2013	746	126 (13)	140 (559)	198 (166)		285 (8)					

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)				
2010	162		210 (142)	293 (6)		386 (8)		486 (2)	466 (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).

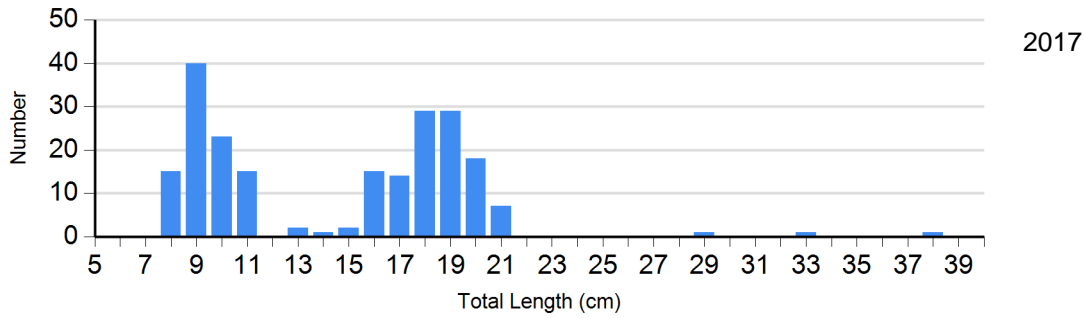
Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Black Crappie Frame Net	2015	406	105 (0.7)	26	89 (0.9)	0		0	
	2016	122	102 (0.6)	34	98 (1.0)	0		6	89 (2.6)
	2017	92	91 (0.8)	25	86 (0.9)	1	83	2	83 (8.9)
	2018	71	93 (1.0)	7	82 (3.7)	0		1	69
	2019	122	93 (0.6)	20	83 (2.5)	1		0	
Bluegill Frame Net	2015	808	106 (1.0)	232	100 (0.5)	8	95 (0.0)	0	
	2016	310	113 (1.2)	228	114 (0.9)	0		0	
	2017	58	95 (1.6)	83	90 (0.9)	0		0	
	2018	33	94 (1.8)	29	85 (1.2)	0		0	
	2019	109	99 (1.2)	165	92 (1.0)	0		0	
Largemouth Bass Electro Fishing	2015	16	96 (2.3)	44	103 (1.3)	62	101 (1.1)	0	
	2016	62	111 (0.9)	92	106 (0.9)	58	105 (1.3)	2	96 (0.0)
	2017	144	107 (2.1)	92	105 (1.0)	103	105 (1.1)	0	
	2018	42	100 (1.4)	55	102 (4.4)	45	99 (1.9)	0	
	2019	22	111 (2.1)	28	102 (1.5)	25	104 (1.9)	0	
Northern Pike Gill Net	2015	0		0		6	102 (2.6)	0	
	2017	0		0		3	94 (1.4)	0	
	2019	0		0		2	102 (6.2)	0	
White Crappie Frame Net	2015	0		10	90 (1.4)	2	87 (0.0)	2	88 (0.0)
	2016	0		4	91 (2.1)	8	87 (2.6)	20	88 (1.3)
	2019	2	105 (3.7)	0		1	92	7	92 (1.8)
Yellow Perch Gill Net	2015	2	92 (0.0)	0		0		0	

Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Yellow Perch Gill Net	2017	9	85 (1.9)	0		0		0	
	2019	4	75 (22.4)	0		0		0	

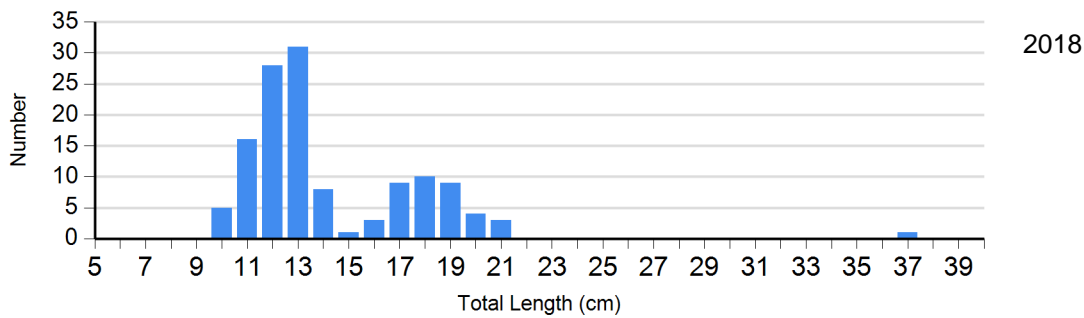
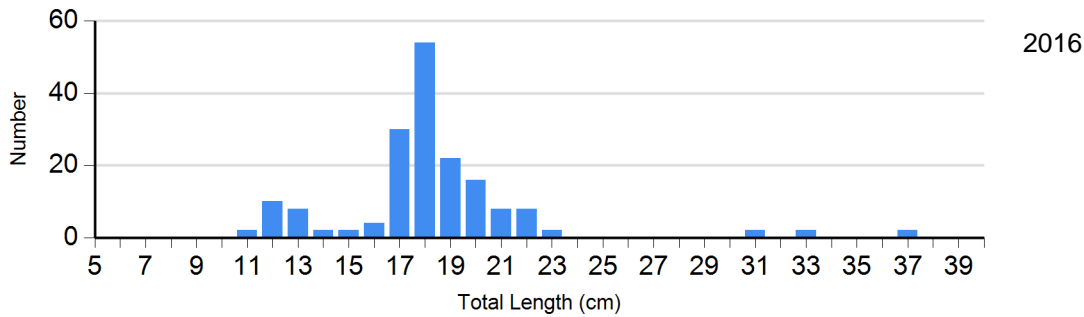
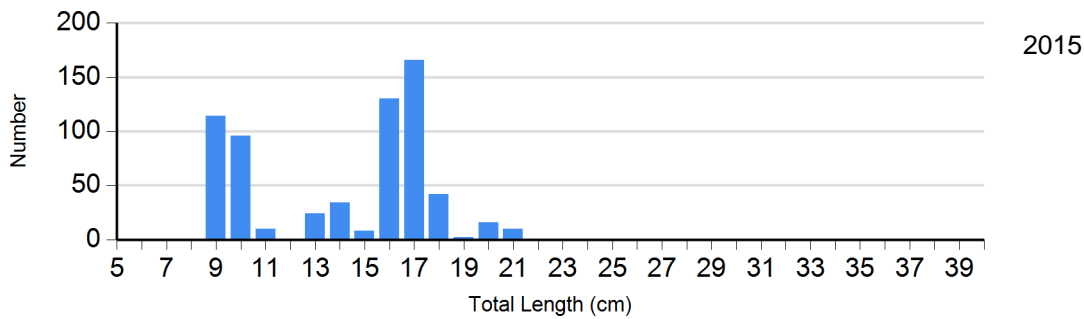
# Length Frequency Distribution

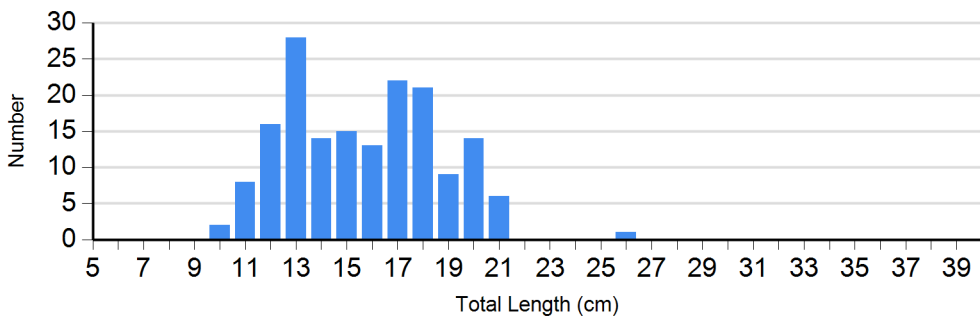
Length frequency histogram of species sampled by year.

Species: Black Crappie  
Gear: AFS std frame net



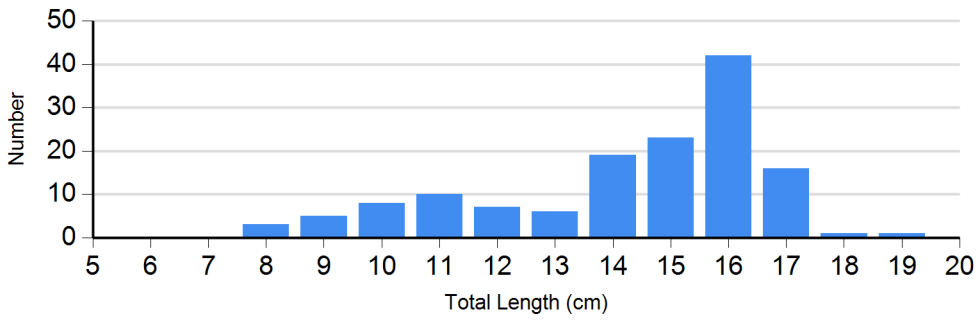
Species: Black Crappie  
Gear: frame net (std 3/4 in)





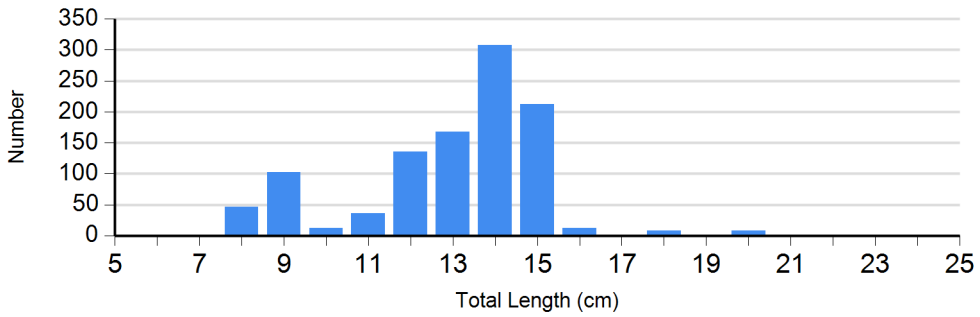
2019

Species: Bluegill  
Gear: AFS std frame net

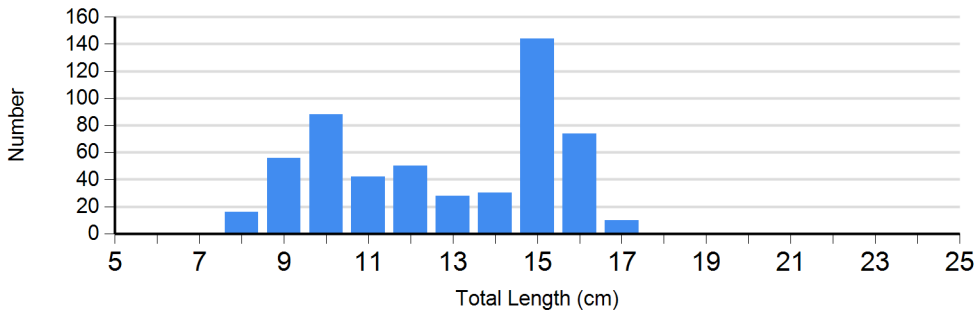


2017

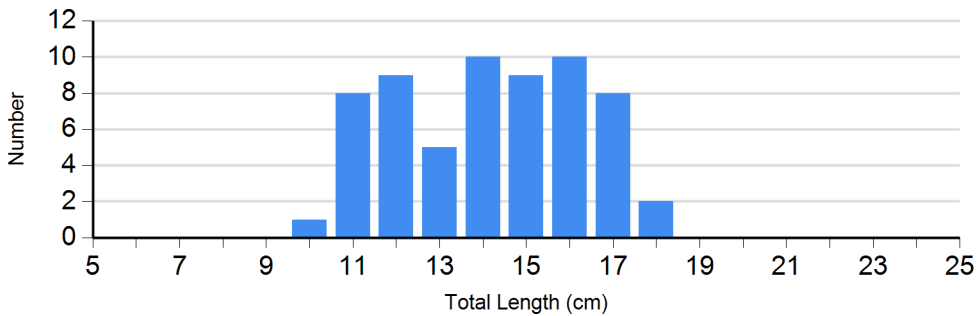
Species: Bluegill  
Gear: frame net (std 3/4 in)



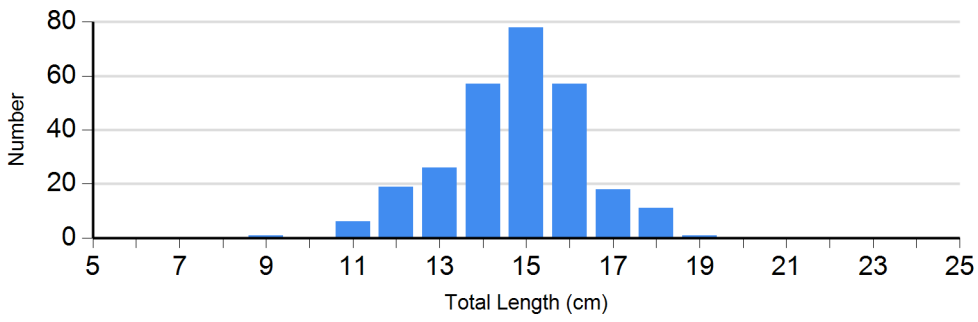
2015



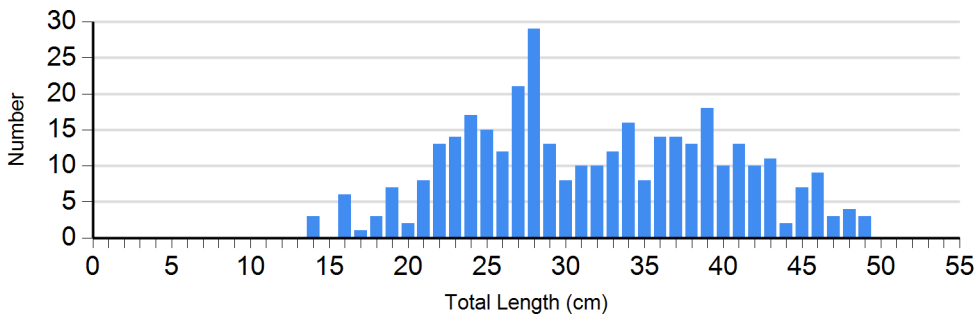
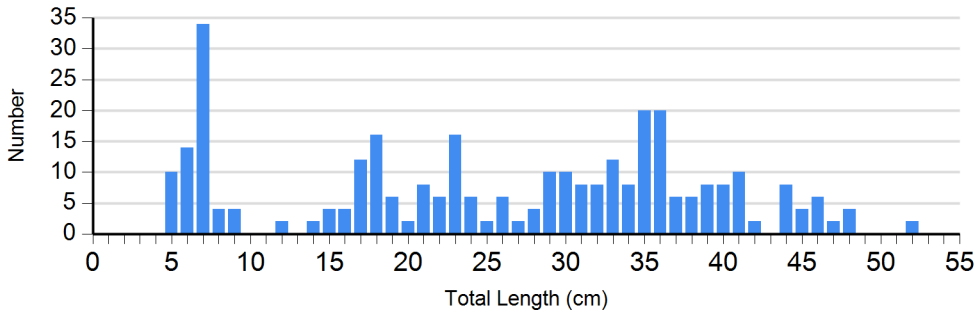
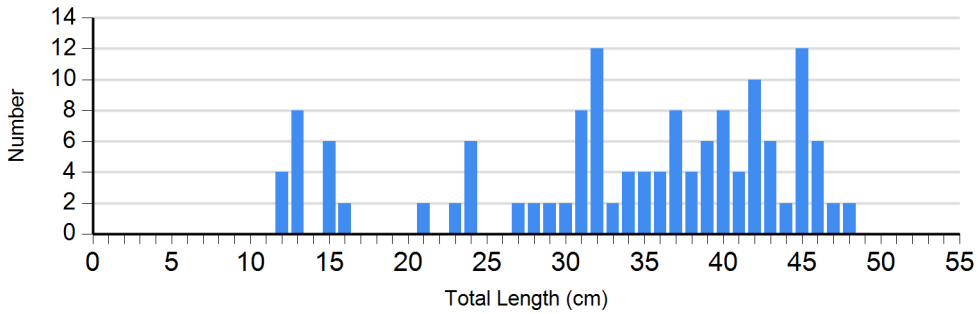
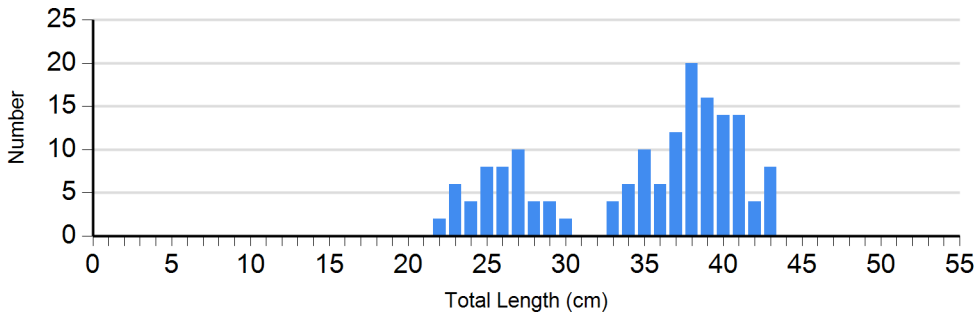
2016

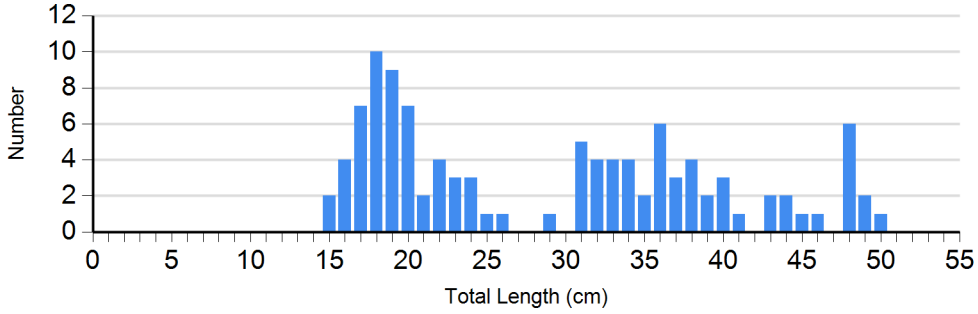
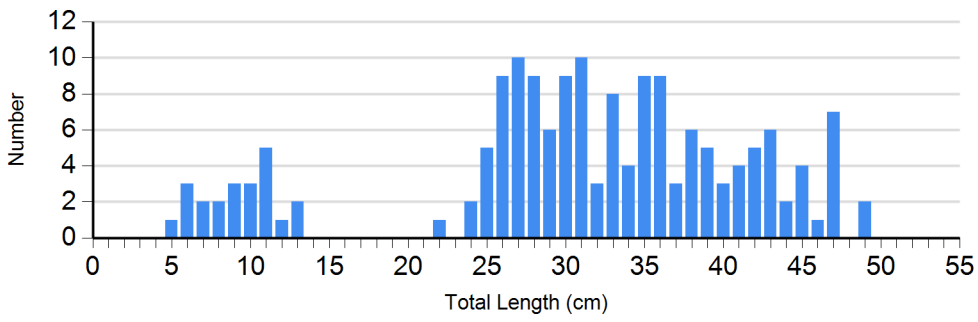


2018

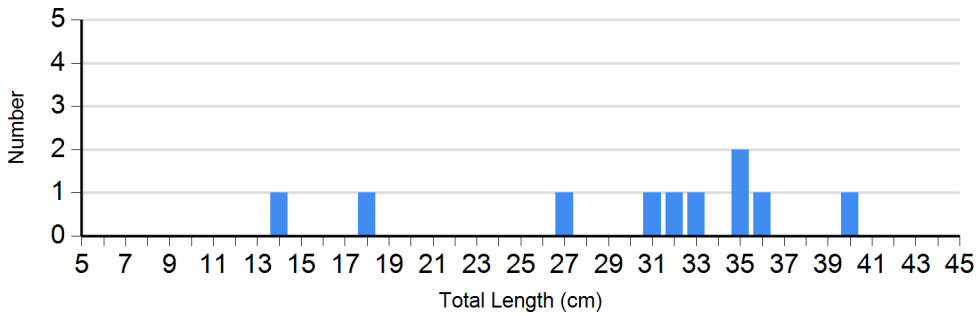
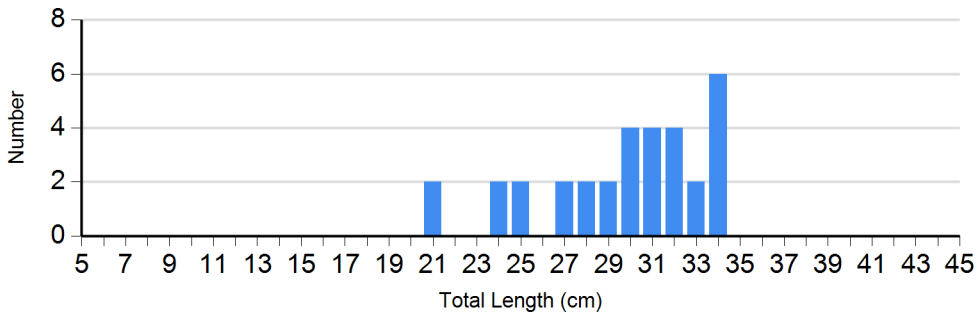
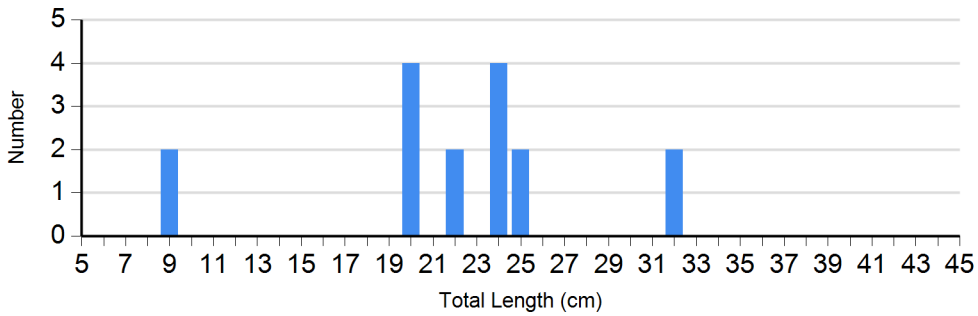


Species: Largemouth Bass  
Gear: boat shocker (night)





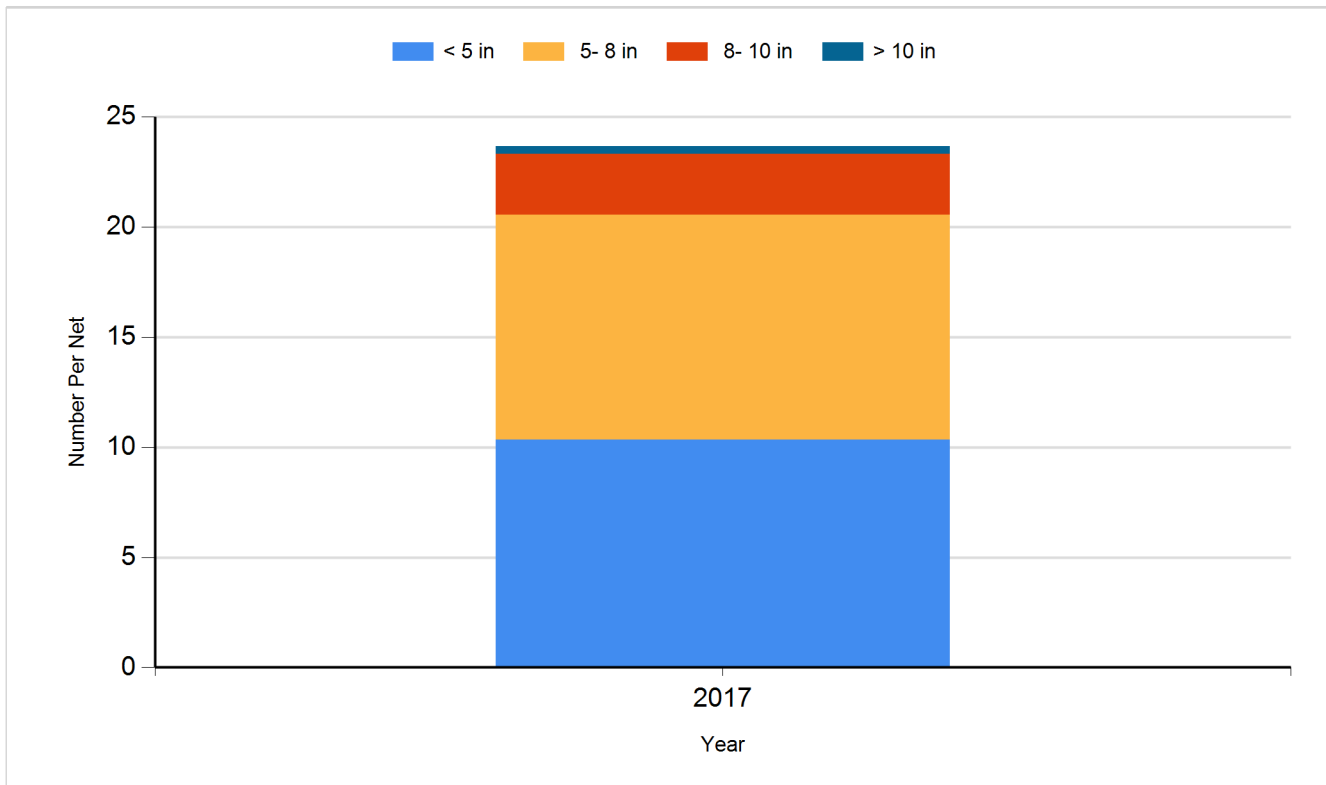
Species: White Crappie  
 Gear: frame net (std 3/4 in)



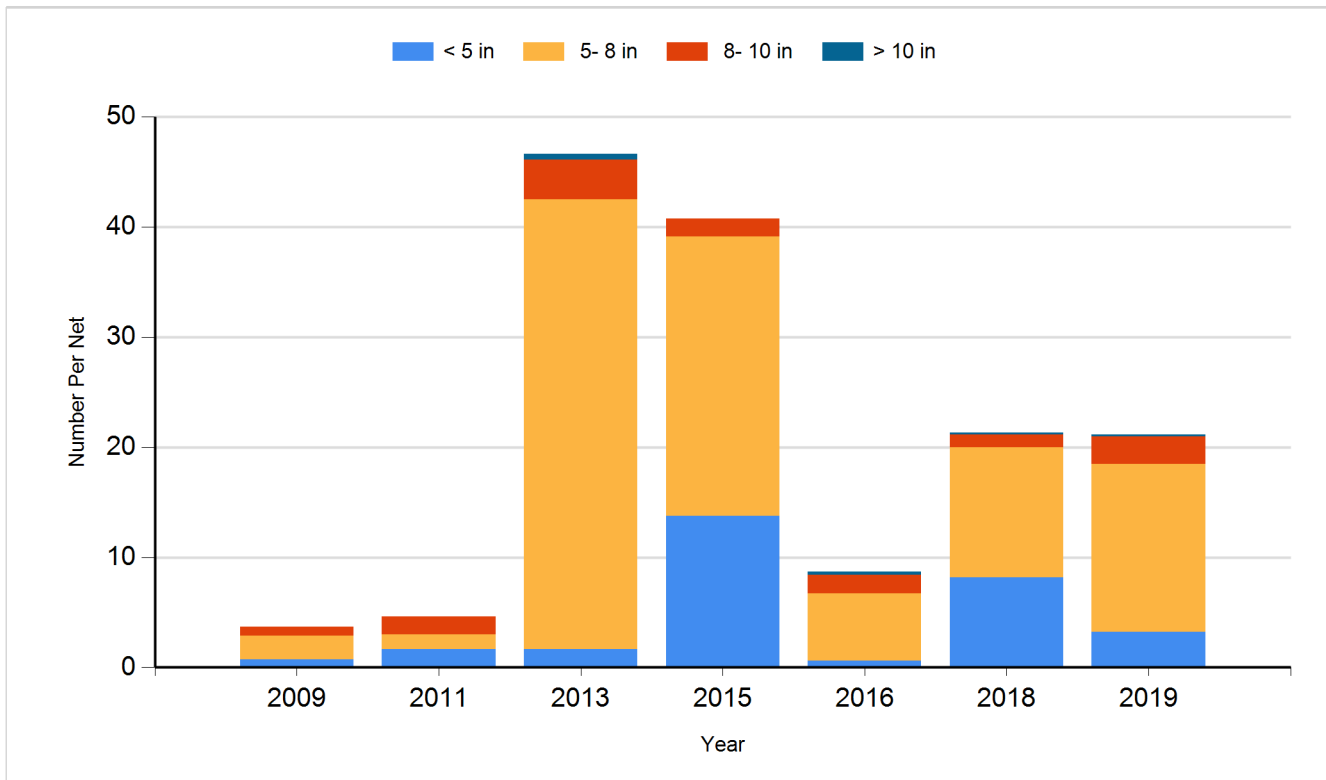
## Historic Fish Sizes and Relative Abundance

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

Species: Black Crappie  
Gear: AFS std frame net

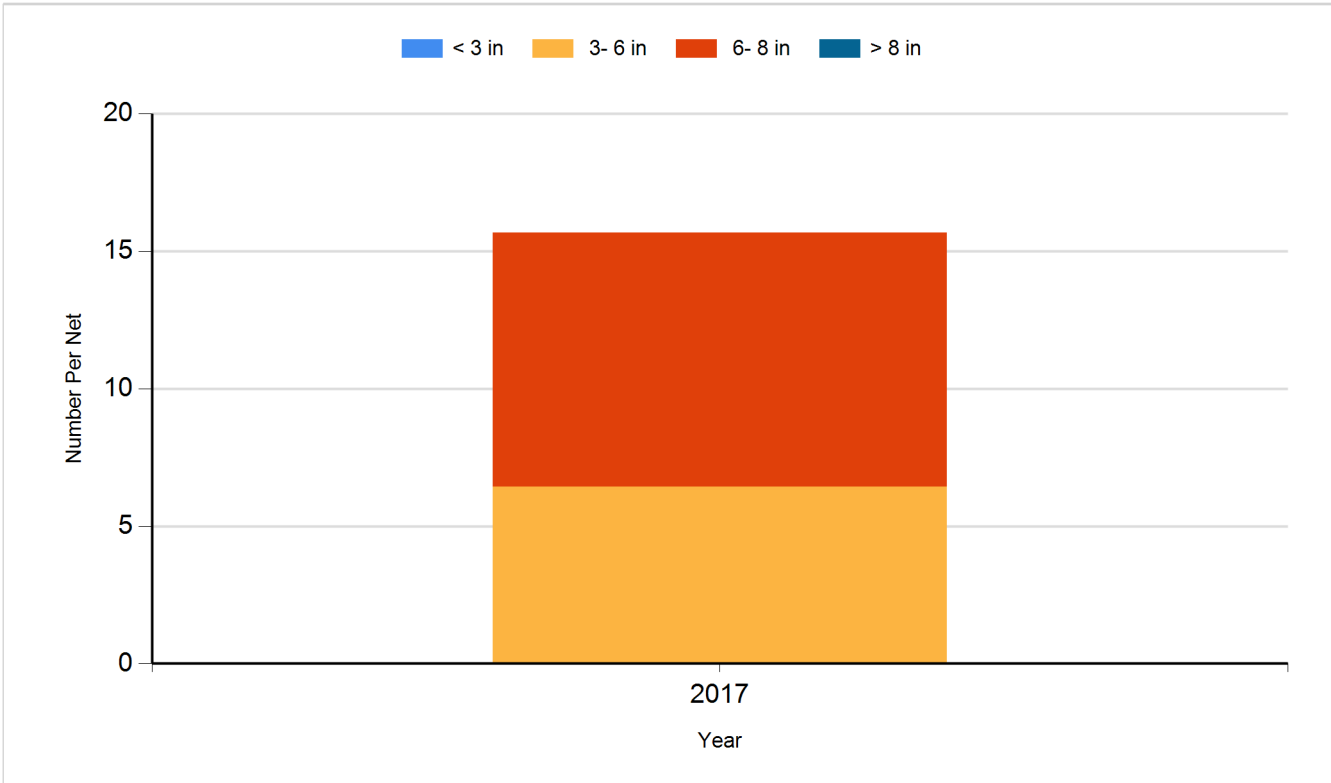


Species: Black Crappie  
Gear: frame net (std 3/4 in)

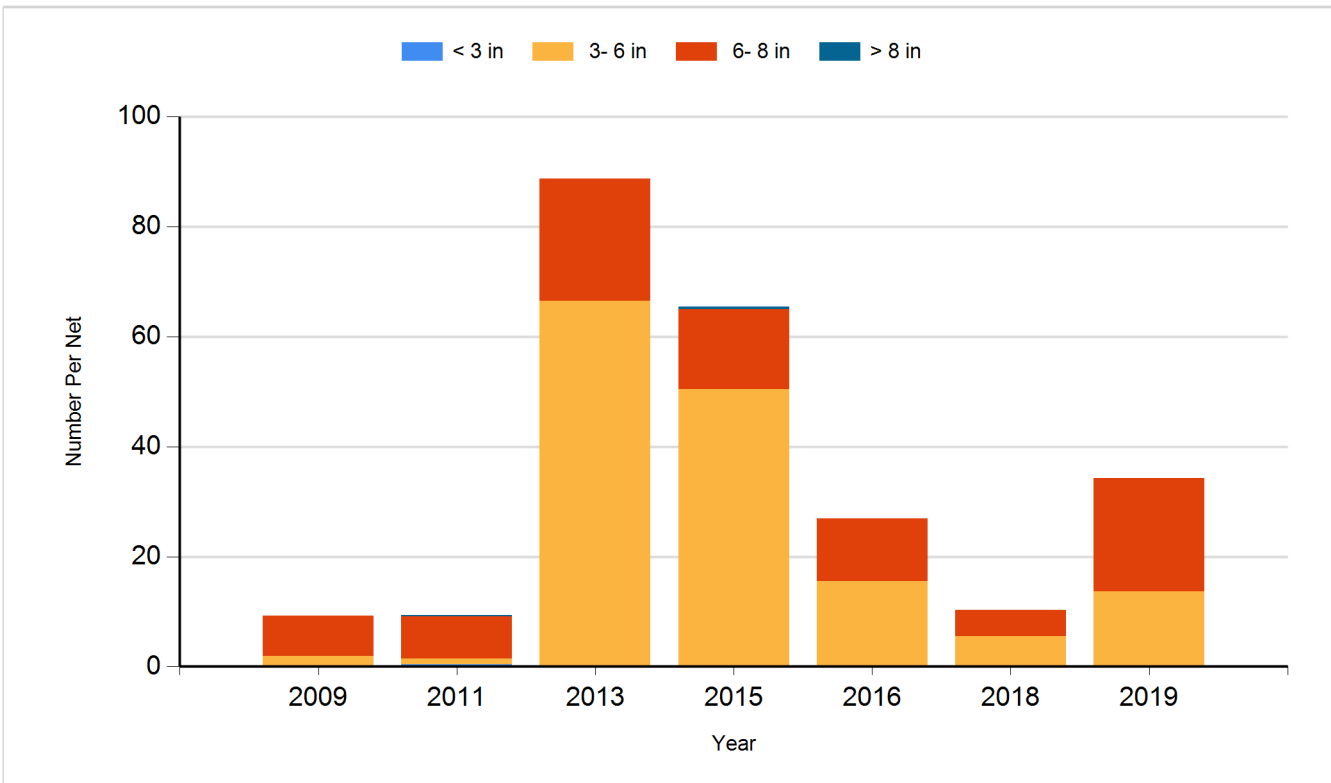




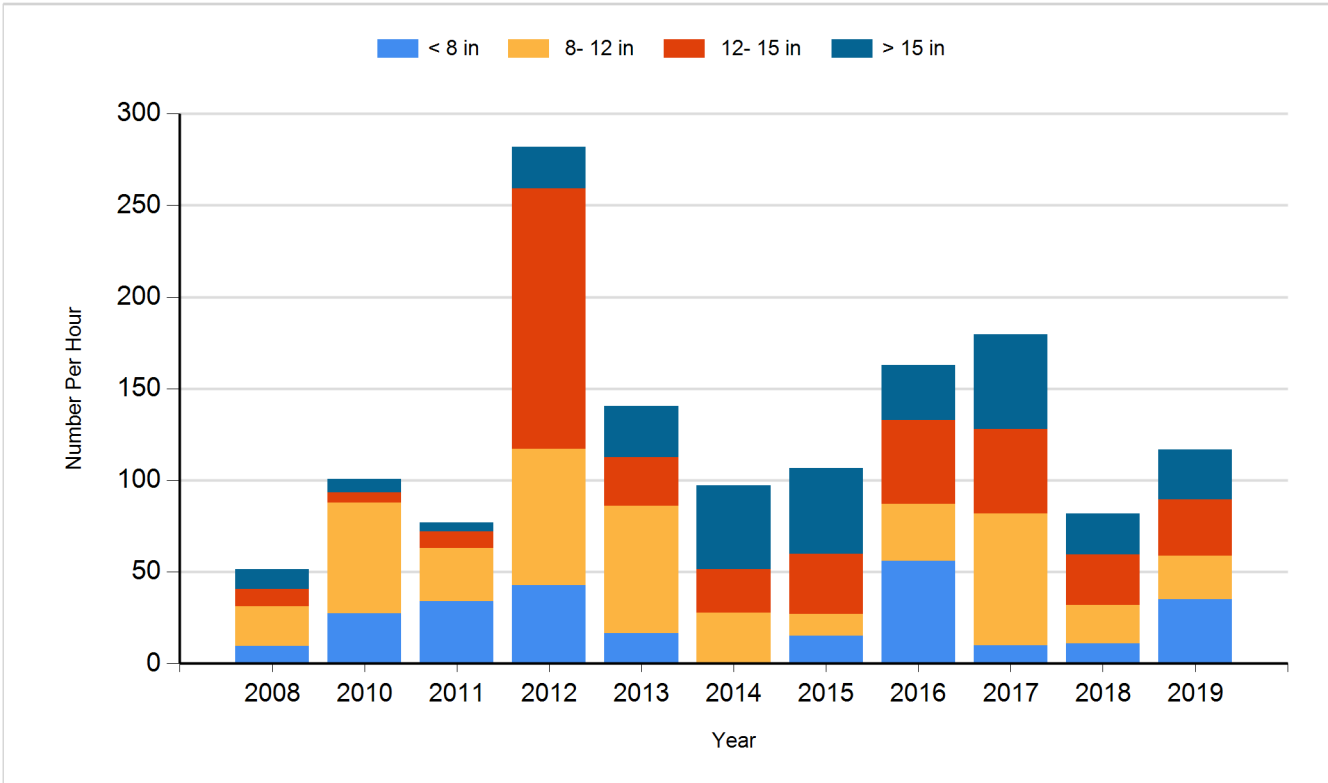
Species: Bluegill  
Gear: AFS std frame net



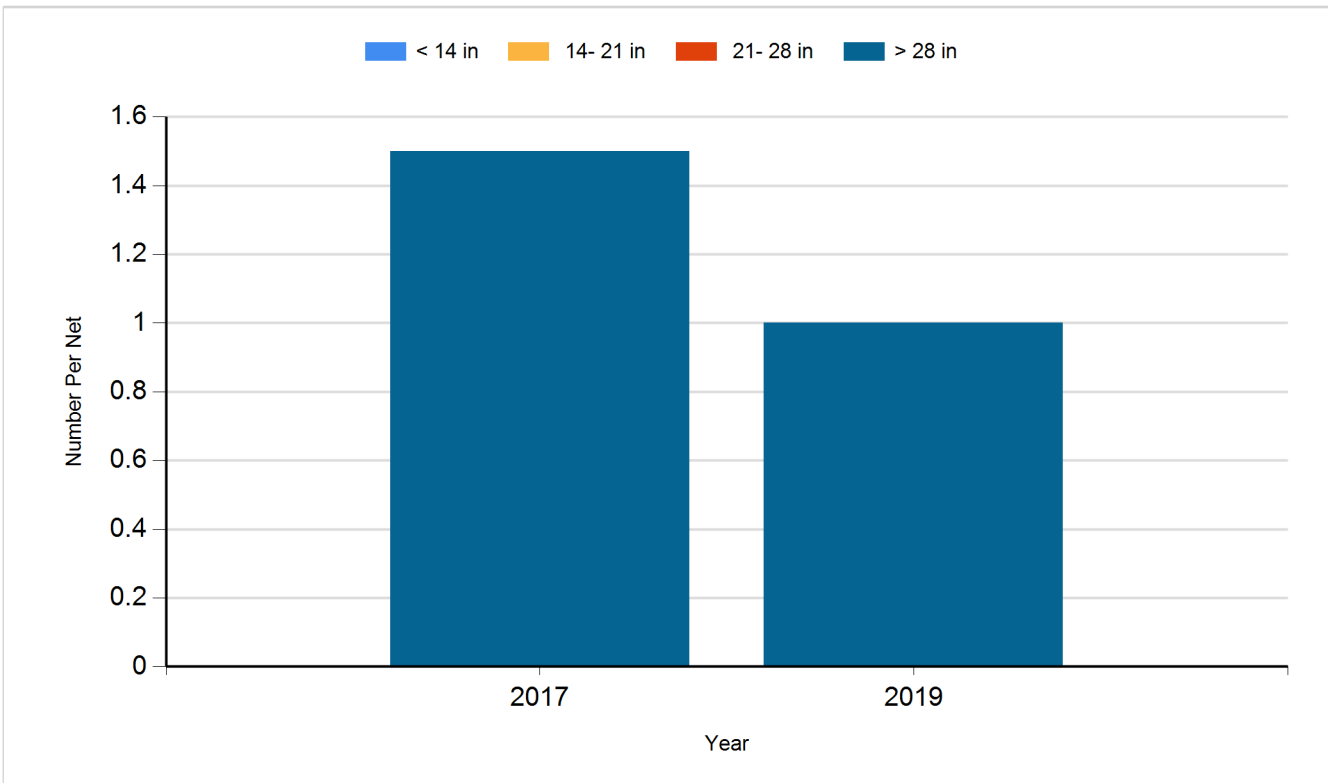
Species: Bluegill  
Gear: frame net (std 3/4 in)



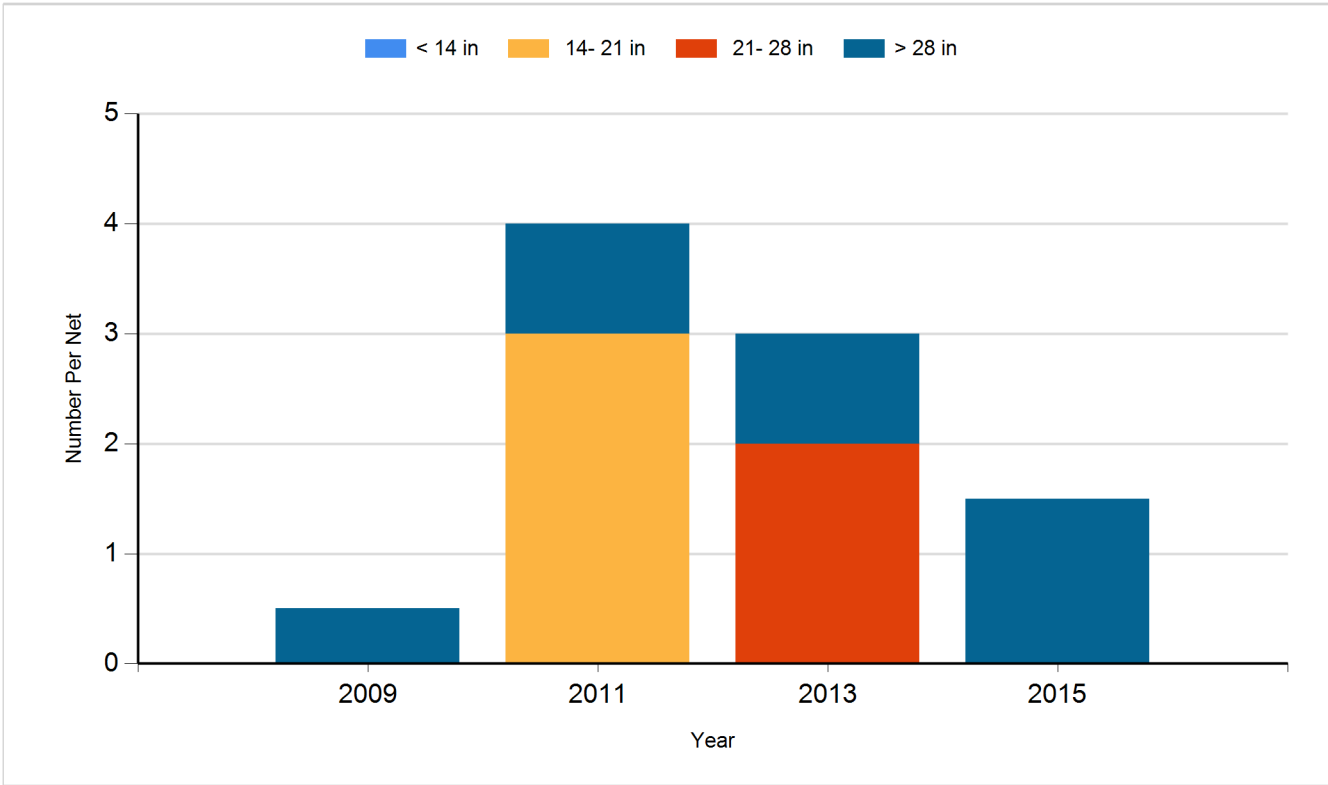
Species: Largemouth Bass  
Gear: boat shocker (night)



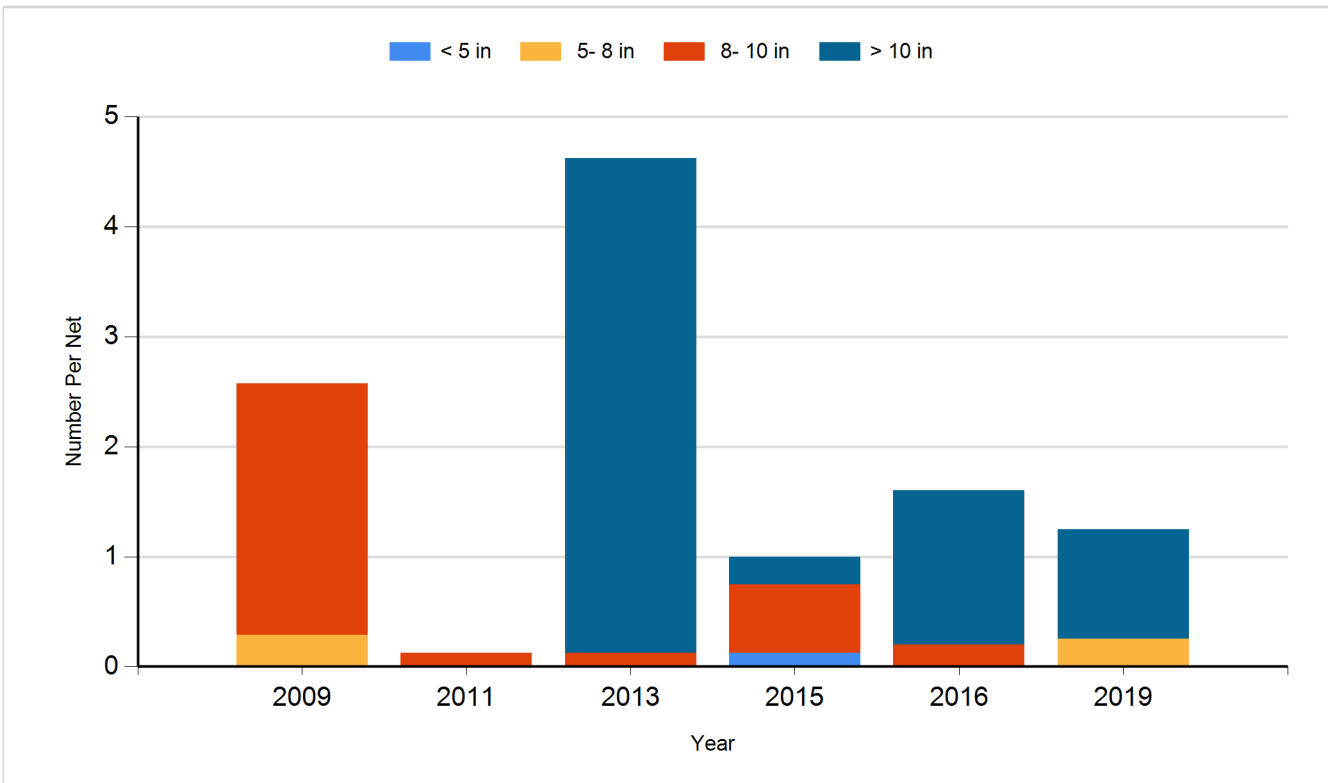
Species: Northern Pike  
Gear: AFS std gill net



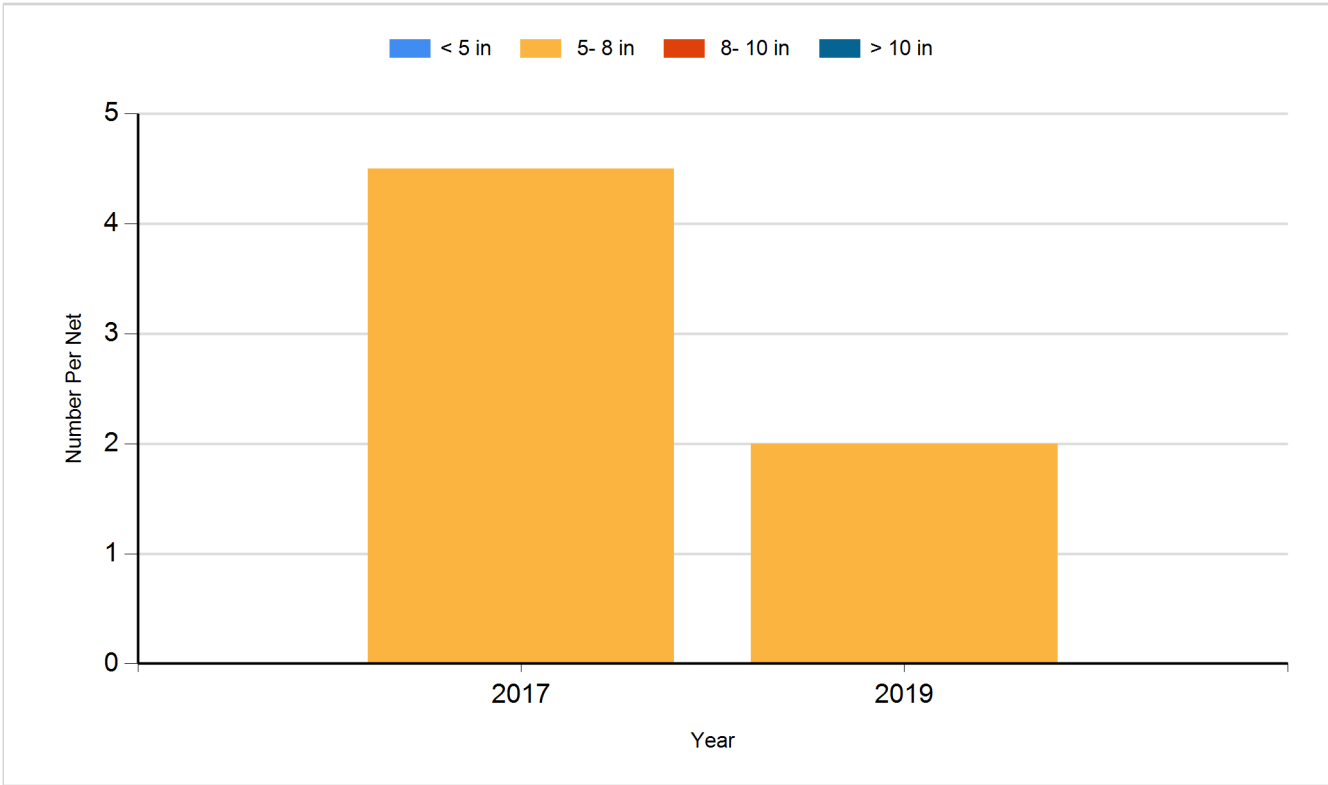
Species: Northern Pike  
Gear: std exp gill net



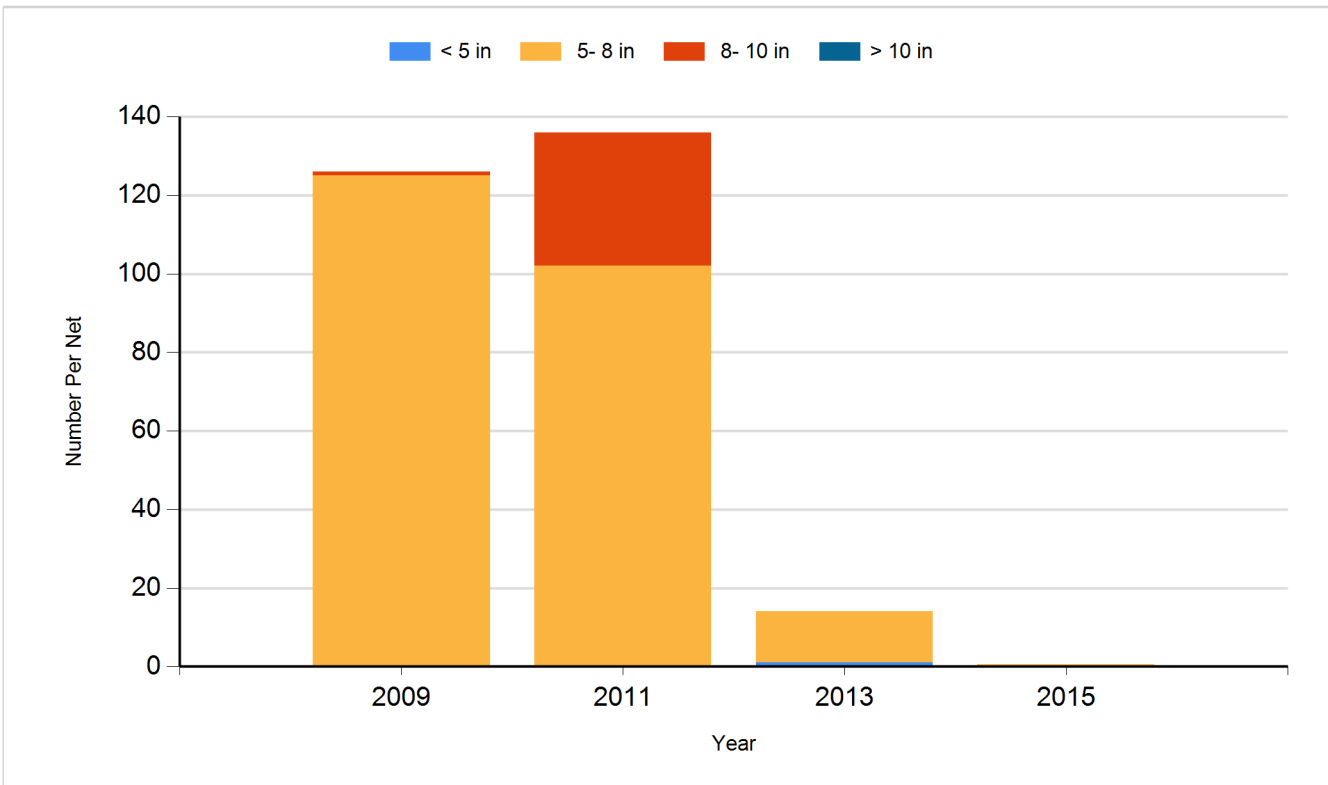
Species: White Crappie  
Gear: frame net (std 3/4 in)



Species: Yellow Perch  
Gear: AFS std gill net



Species: Yellow Perch  
Gear: std exp gill net



## **Fish Stocking**

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

Year	Species	Size	Number
2009	Largemouth Bass	Fingerling	3,700