SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
New Wall, Pennington County
MCE-Lake-9-000
2022

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
frame net (std 3/4 in)	Jul 07, 2022	5 net-nights

Common Fish Species Present

Bluegill

Black Crappie

Yellow Perch

Northern Pike

Largemouth Bass

Golden Shiner

Crappie Hybrid

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
frame net (std 3/4 in)	Black Crappie	28	5.4	3.8	7		0		86	2
	Bluegill	396	79.2	31.4	11	2	0		87	1
	Crappie Hybrid	1	0.0	0.0						
	Golden Shiner	2	0.0	0.0						
	Yellow Perch	28	5.6	4.4	14		0		81	2

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	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Avg
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		120.00
boat shocker (night)	Largemouth Bass	121.3	97.2	91.5	107.0	169.5	71.0	82.0	76.0			101.94
frame net (std 3/4 in)	Black Crappie	45.0		27.0	8.1		13.2	17.9	30.2	76.0	5.4	27.85
	Bluegill	88.8		65.5	26.9		10.3	34.3	18.3	102.6	79.2	53.24
	Crappie Hybrid	0.0		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	0.0	0.00
	Largemouth Bass	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.00
	Northern Pike	0.4		0.8	0.5		0.0	0.1	0.2	0.4	0.0	0.30
	White Crappie	4.6		0.9	1.6		0.0	1.3	1.2	2.0	0.0	1.45
	Yellow Perch	4.0		3.9	1.9		1.2	16.5	6.5	19.0	5.6	7.33
std exp gill net	Black Crappie	22.0		1.5								11.75
	Bluegill	8.0		5.5								6.75
	Golden Shiner	0.0		0.0								0.00
	Largemouth Bass	1.0		0.0								0.50
	Northern Pike	3.0		1.5								2.25
	White Crappie	0.0		0.0								0.00
	Yellow Perch	13.0		0.5								6.75

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	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
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	
		PSD-P									40	
		Wr									108	
boat shocker (night)	Largemouth Bass	PSD	44	72	87	71	58	70	71	59		
		PSD-P	22	47	51	28	30	32	33	32		
		Wr	116	113	101	107	106	100	106	108		
frame net (std 3/4 in)	Black Crappie	PSD	9		6	25		10	15	4	1	7

			Year									
Gear	Species	Index	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
frame net (std 3/4 in)	Black Crappie	PSD-P	1		0	4		1	1	2	0	0
		Wr	95		104	101		91	91	93	91	86
	Bluegill	PSD	25		23	42		47	60	43	19	11
		PSD-P	0		1	0		0	0	0	0	0
		Wr	96		105	114		90	94	98	95	87
	Largemouth Bass	PSD			0				0			
		PSD-P			0				0			
	Northern Pike	PSD	100		50	80			100	100	100	
		PSD-P	67		33	0			100	0	100	
		Wr	99		92	96			108	81	107	
	Yellow Perch	PSD	59		13	26		71	34	18	22	14
		PSD-P	6		0	5		0	3	5	3	0
		Wr	79		92	89		78	89	86	81	81
std exp gill net	Black Crappie	PSD	0		0							
		PSD-P	0		0							
		Wr	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	100		100							
		PSD-P	33		100							
		Wr	108		102							
	Yellow Perch	PSD	0		0							
		PSD-P	0		0							
		Wr	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)				

Fish Condition

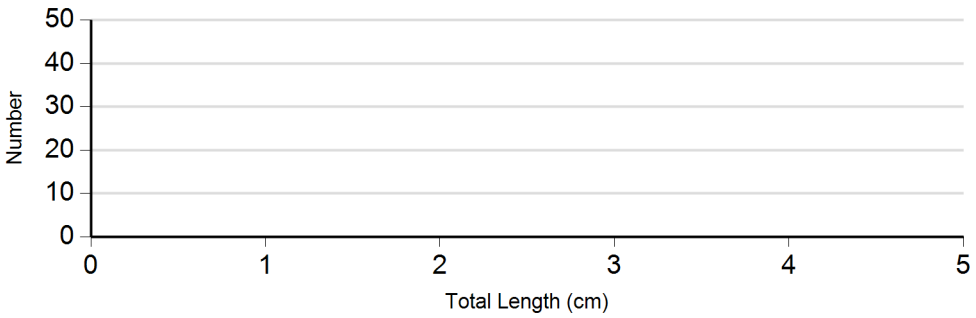
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2018	71	93 (1.0)	7	82 (3.7)	0		1	69
	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	377	91 (0.7)	3		0		0	
	2022	25	86 (1.6)	2	84 (5.2)	0		0	
Bluegill Frame Net	2018	33	94 (1.8)	29	85 (1.2)	0		0	
	2019	109	99 (1.2)	165	92 (1.0)	0		0	
	2020	63	101 (1.8)	47	96 (1.1)	0		0	
	2021	418	96 (1.0)	95	93 (1.7)	0		0	
	2022	353	88 (0.8)	43	72 (1.1)	0		0	
Largemouth Bass Electro Fishing	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	
	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	
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

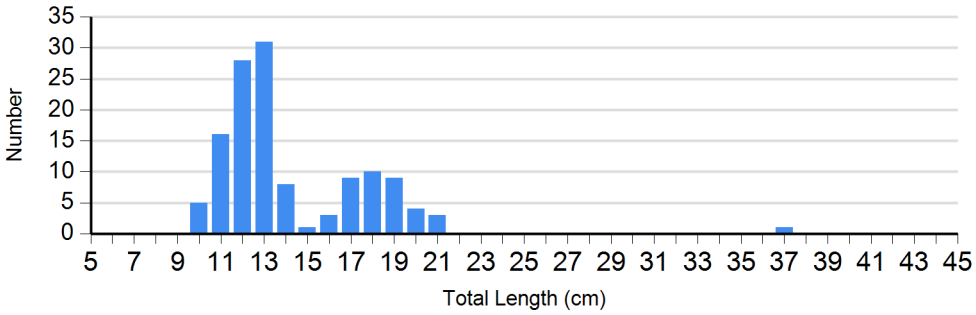
Length frequency histogram of species sampled by year.

Species: Black Crappie
Gear: AFS std frame net

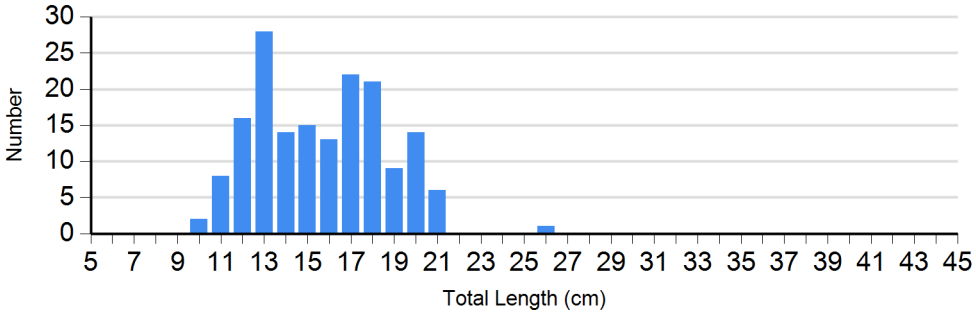


2017

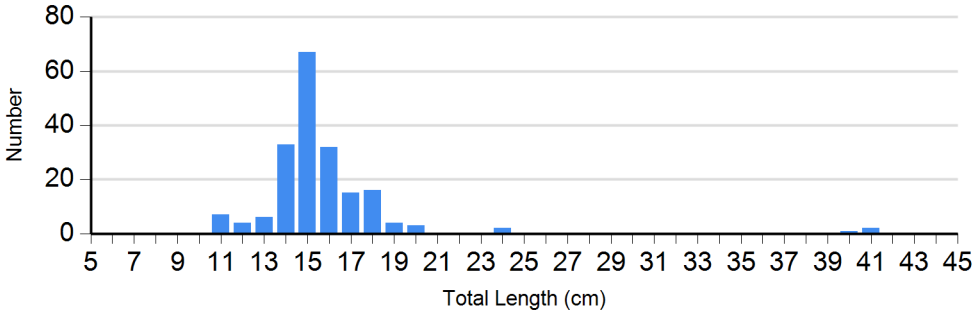
Species: Black Crappie
Gear: frame net (std 3/4 in)



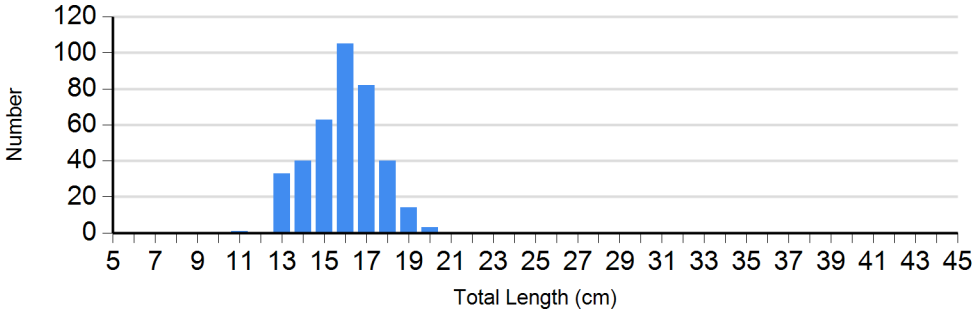
2018



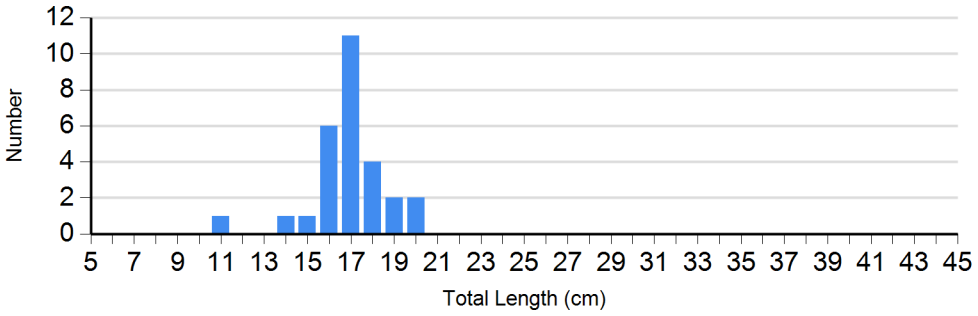
2019



2020

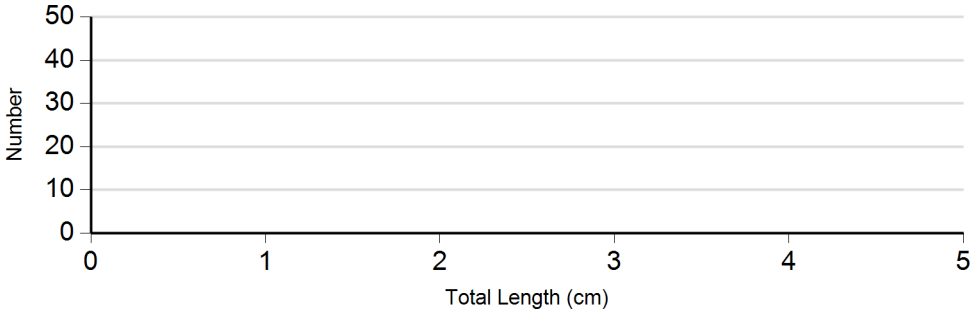


2021



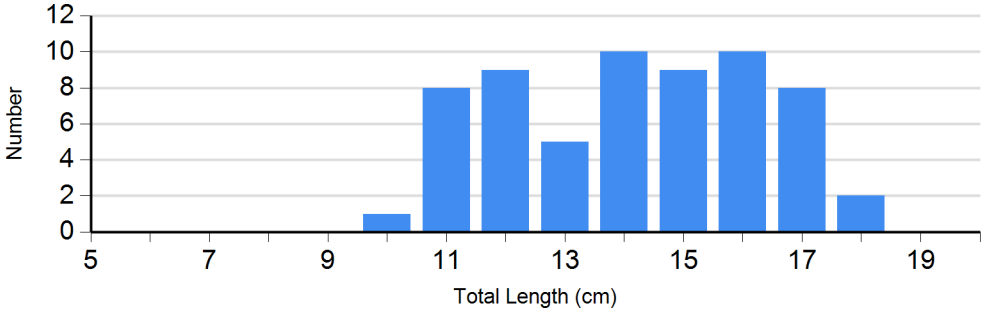
2022

Species: Bluegill
Gear: AFS std frame net

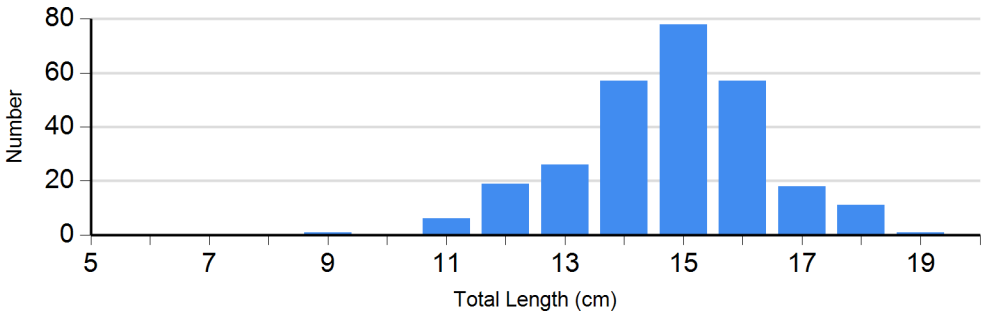


2017

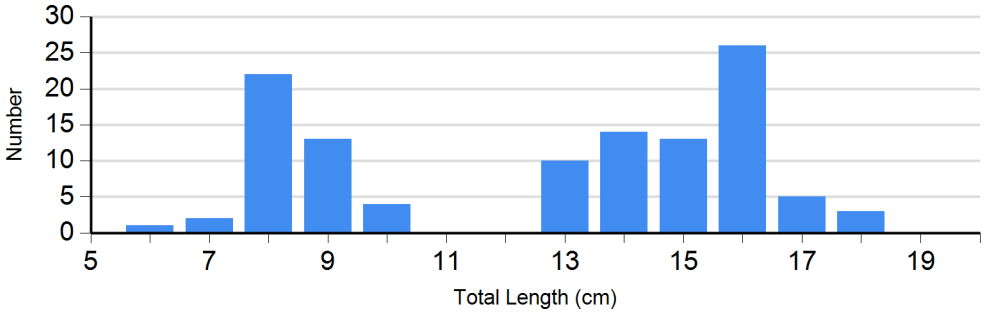
Species: Bluegill
Gear: frame net (std 3/4 in)



2018



2019



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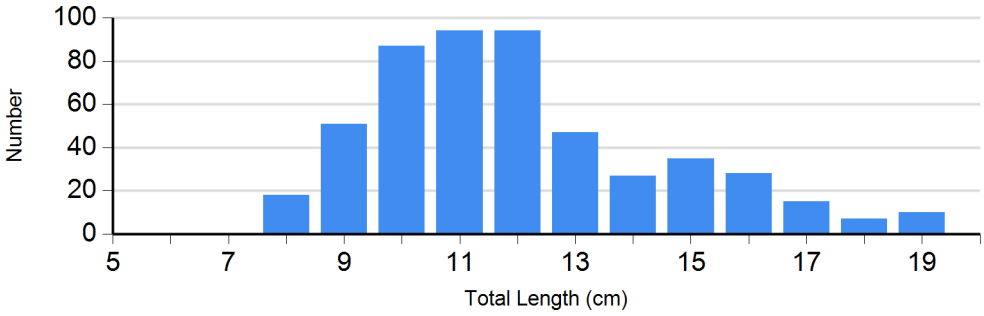
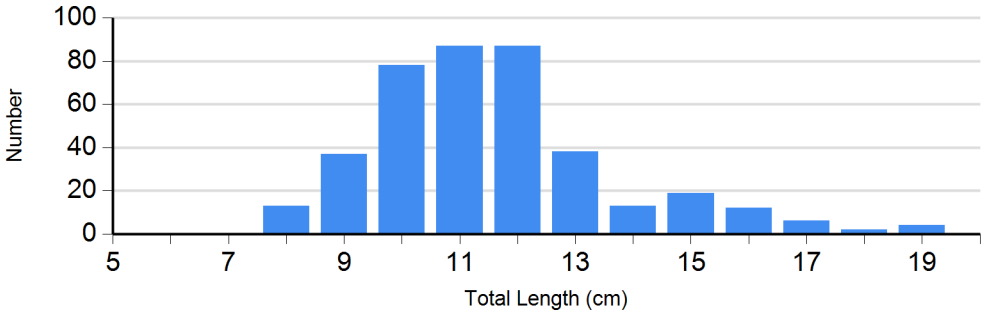
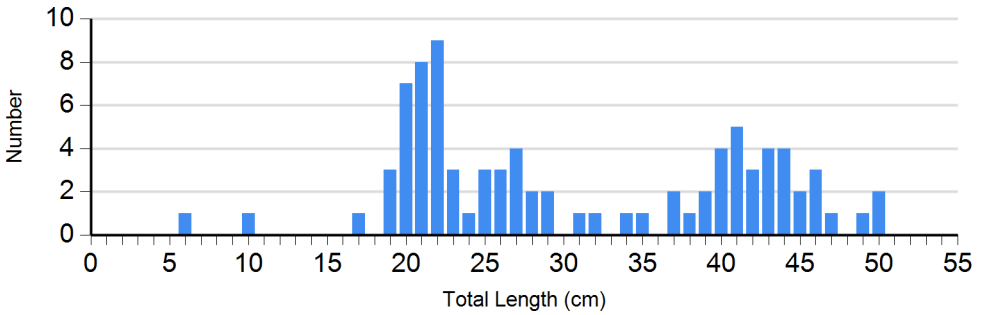


2021



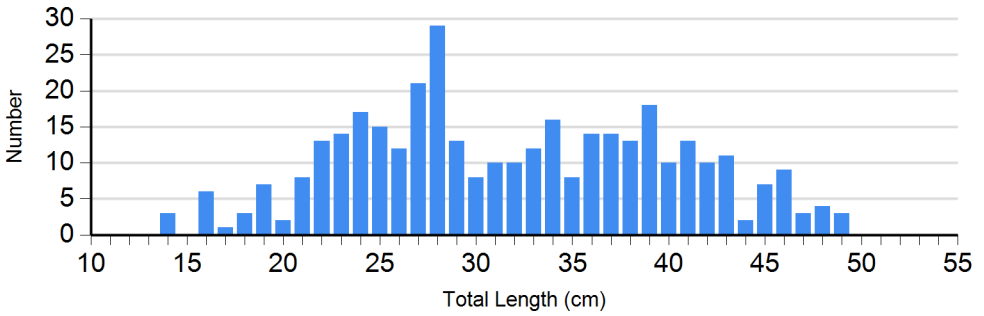
2022

Species: Largemouth Bass
Gear: boat shocker (day)



2021

Species: Largemouth Bass
Gear: boat shocker (night)



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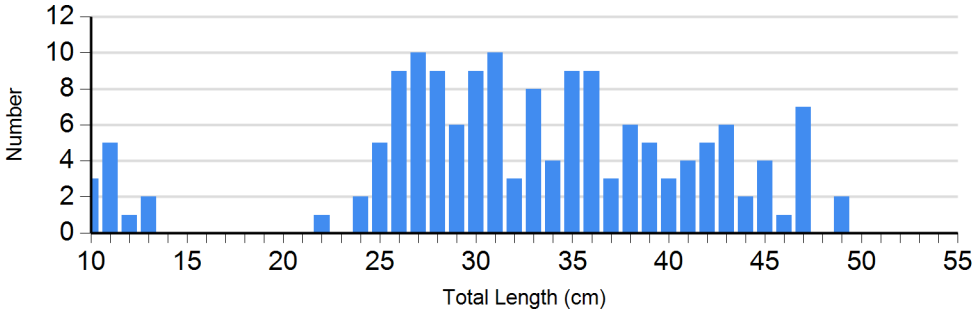

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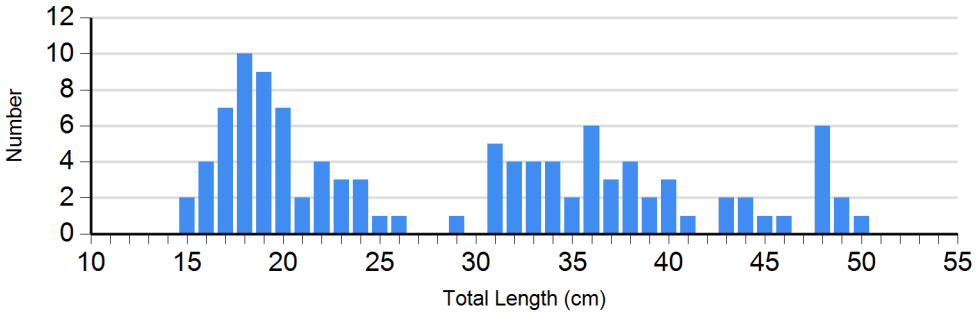

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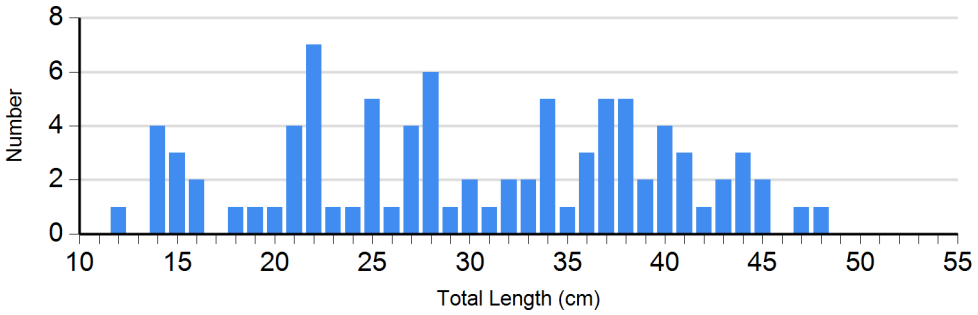
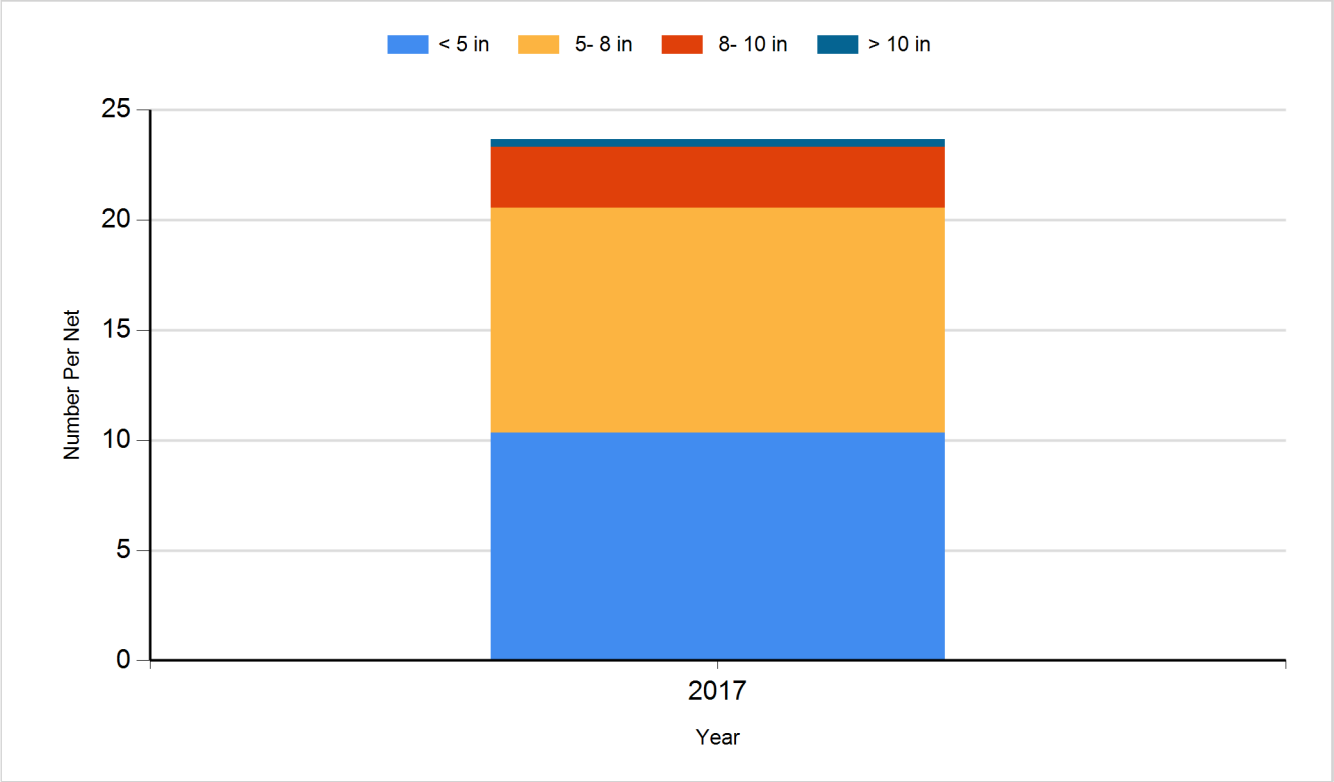


2020

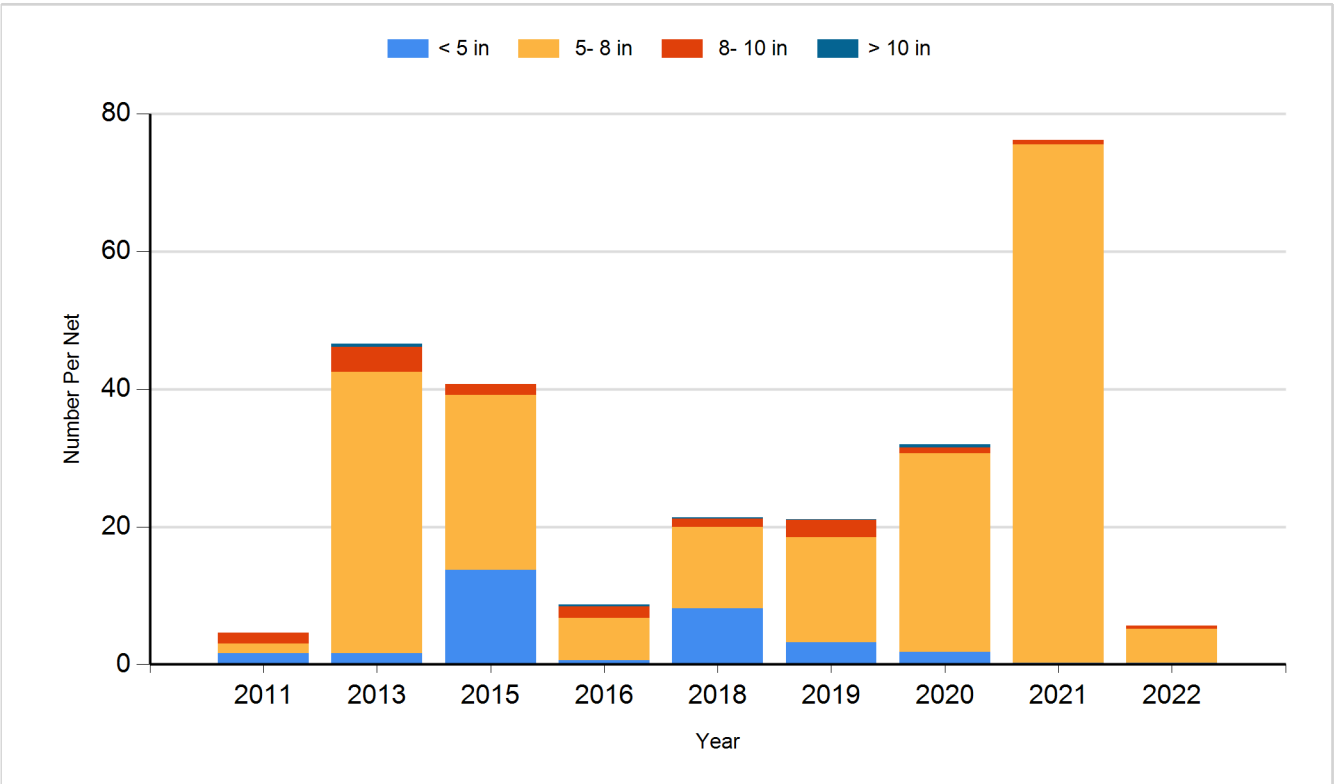
Historic Fish Sizes and Relative Abundance

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

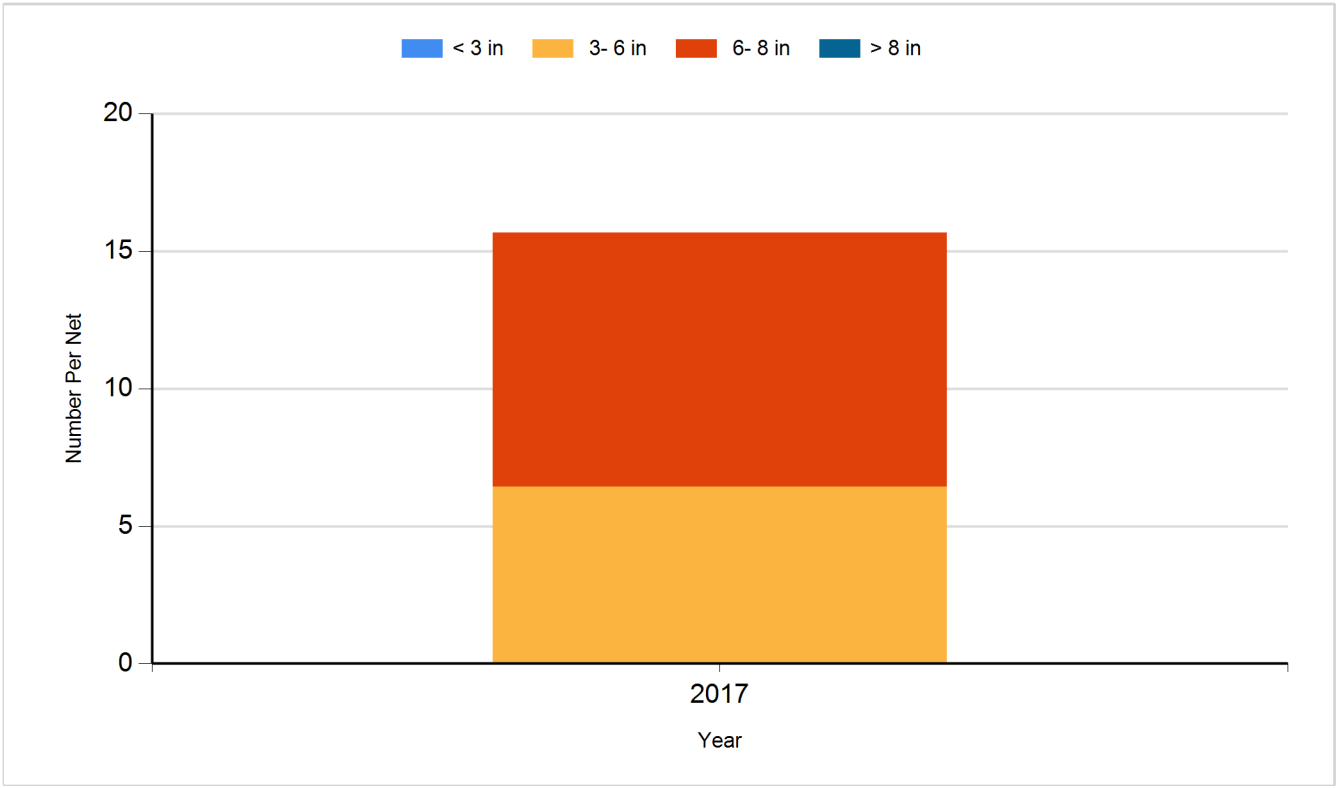
Species: Black Crappie
Gear: AFS std frame net



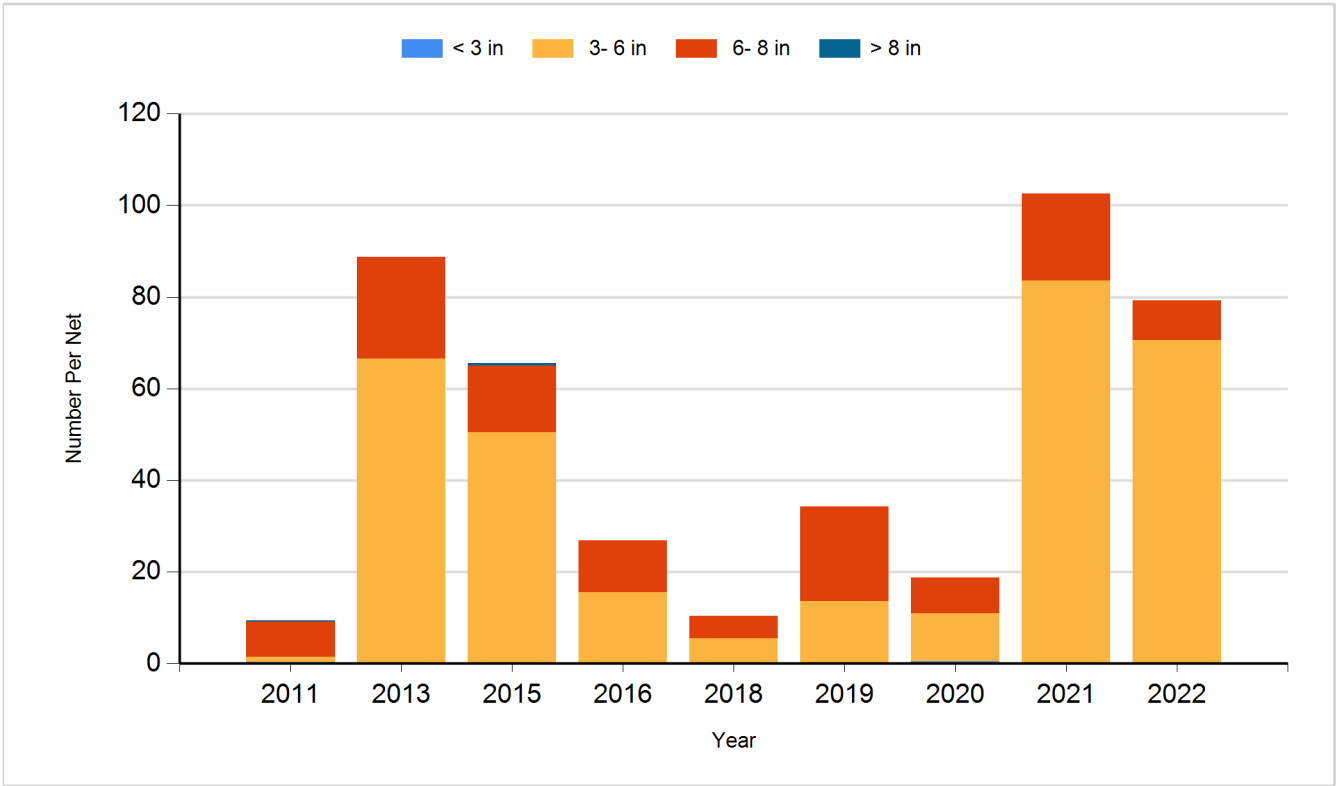
Species: Black Crappie
Gear: frame net (std 3/4 in)



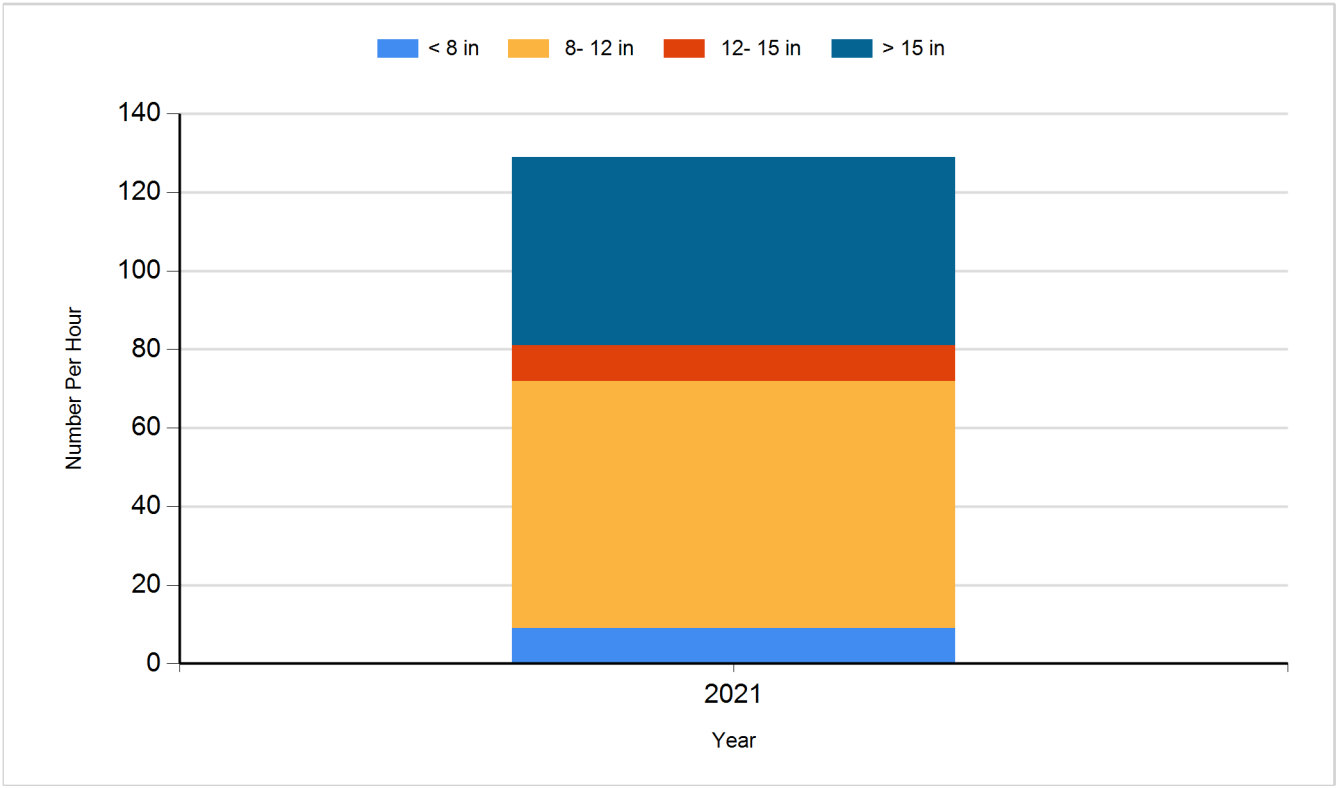
Species: Bluegill
Gear: AFS std frame net



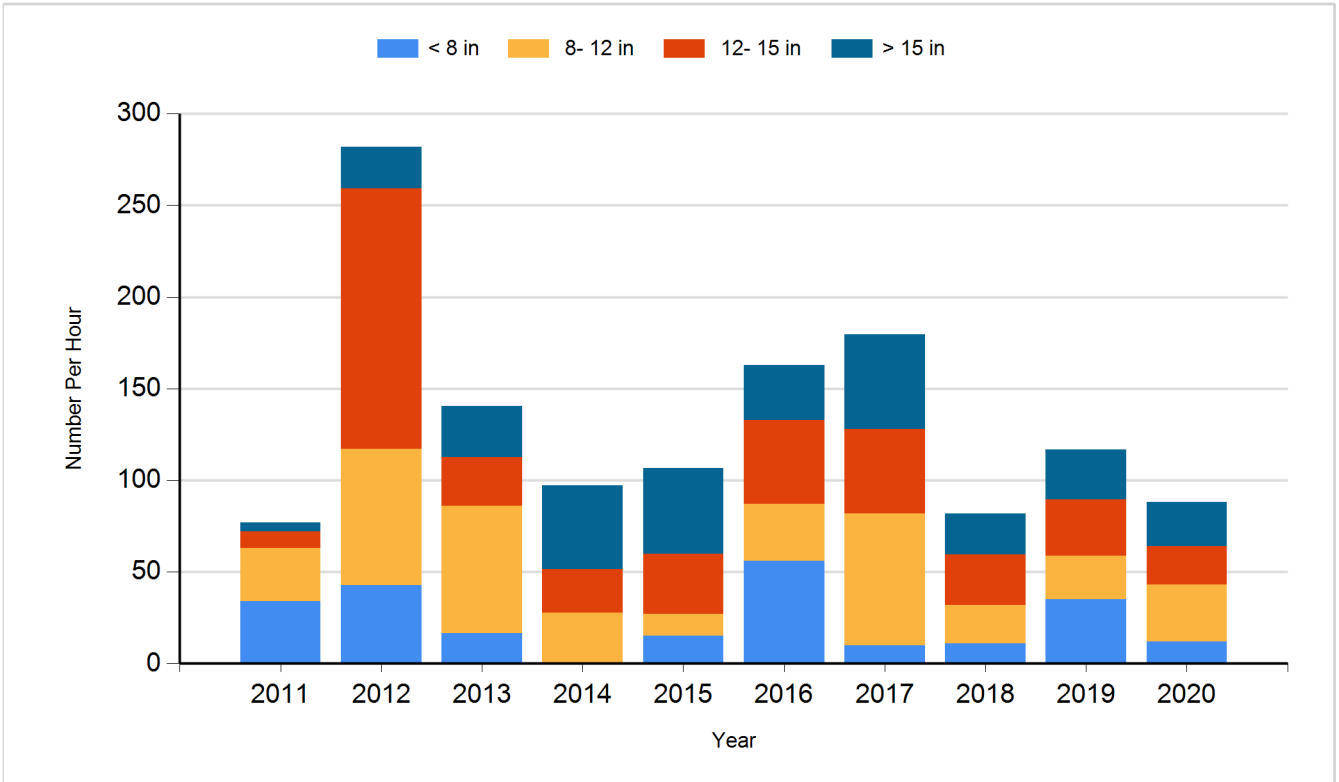
Species: Bluegill
Gear: frame net (std 3/4 in)



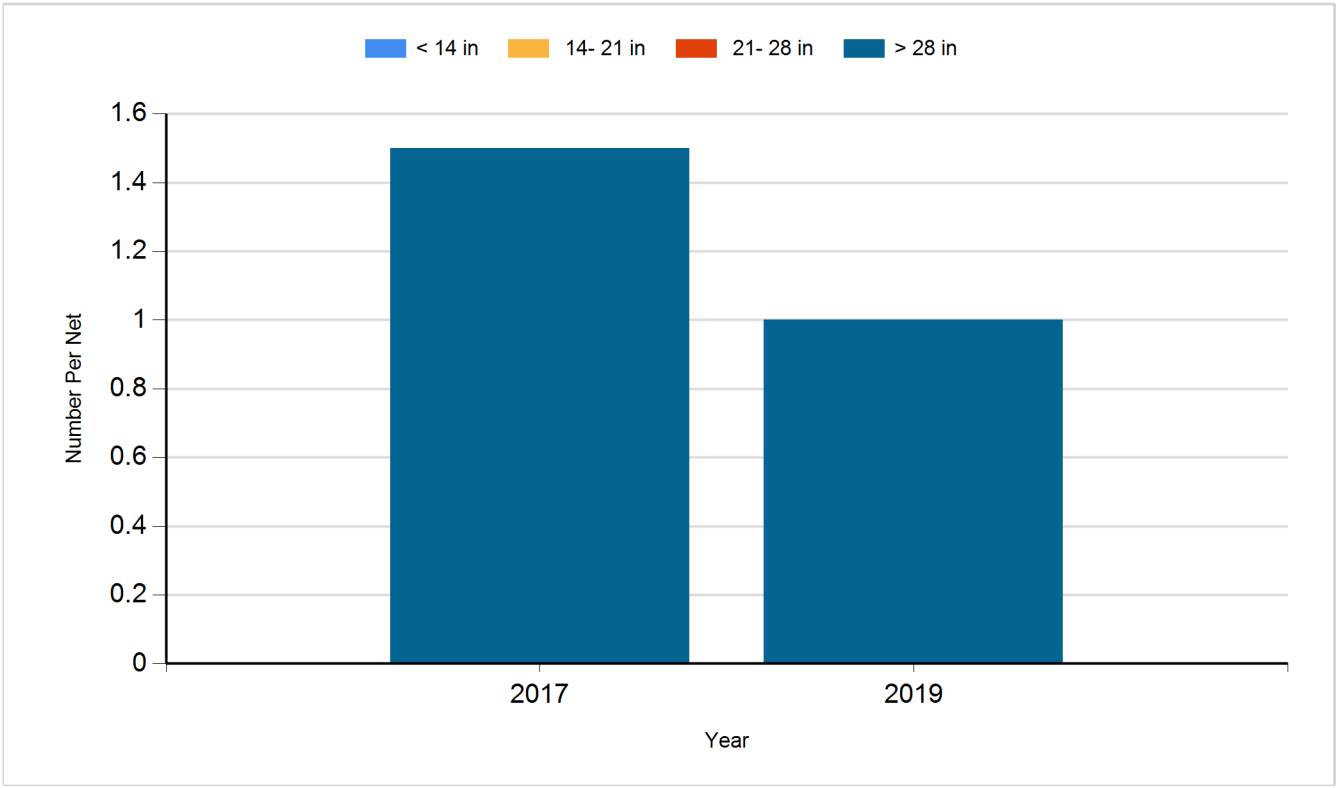
Species: Largemouth Bass
Gear: boat shocker (day)



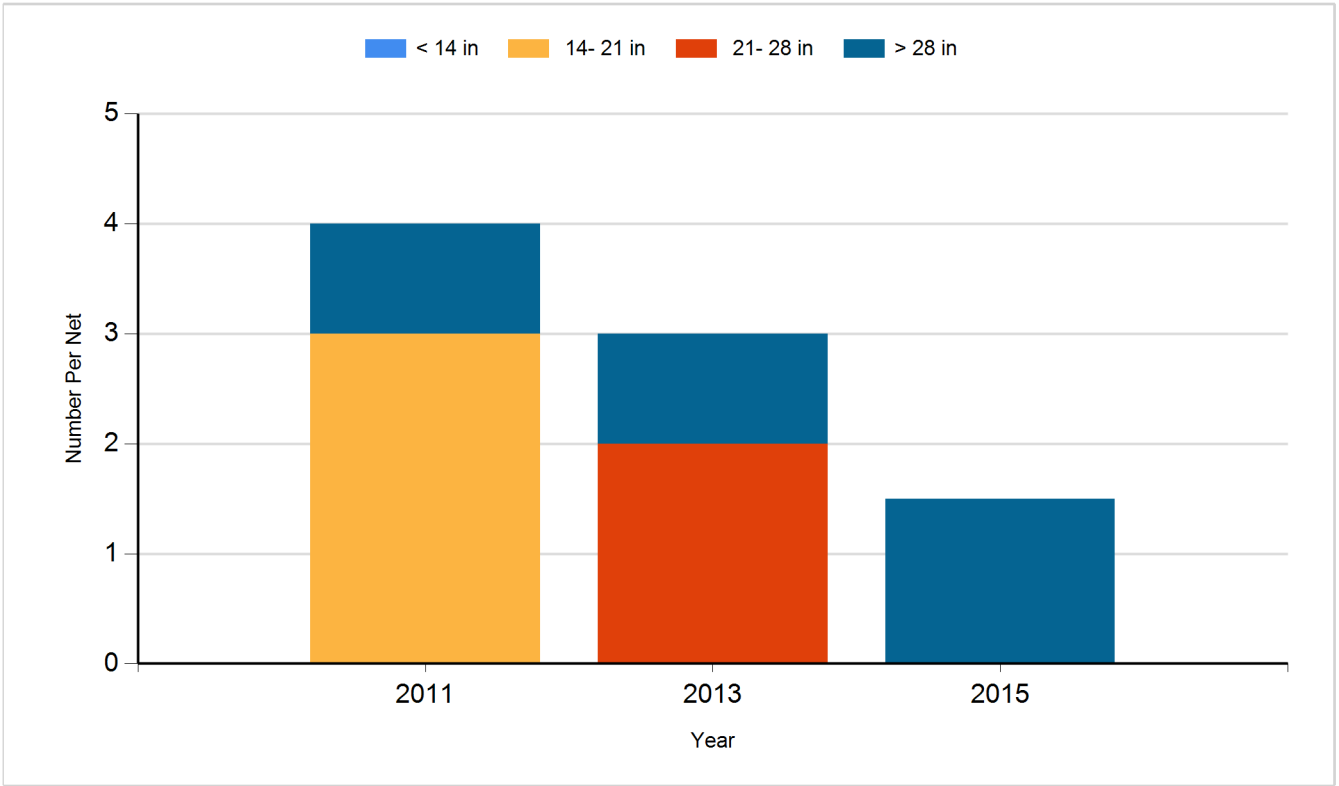
Species: Largemouth Bass
Gear: boat shocker (night)



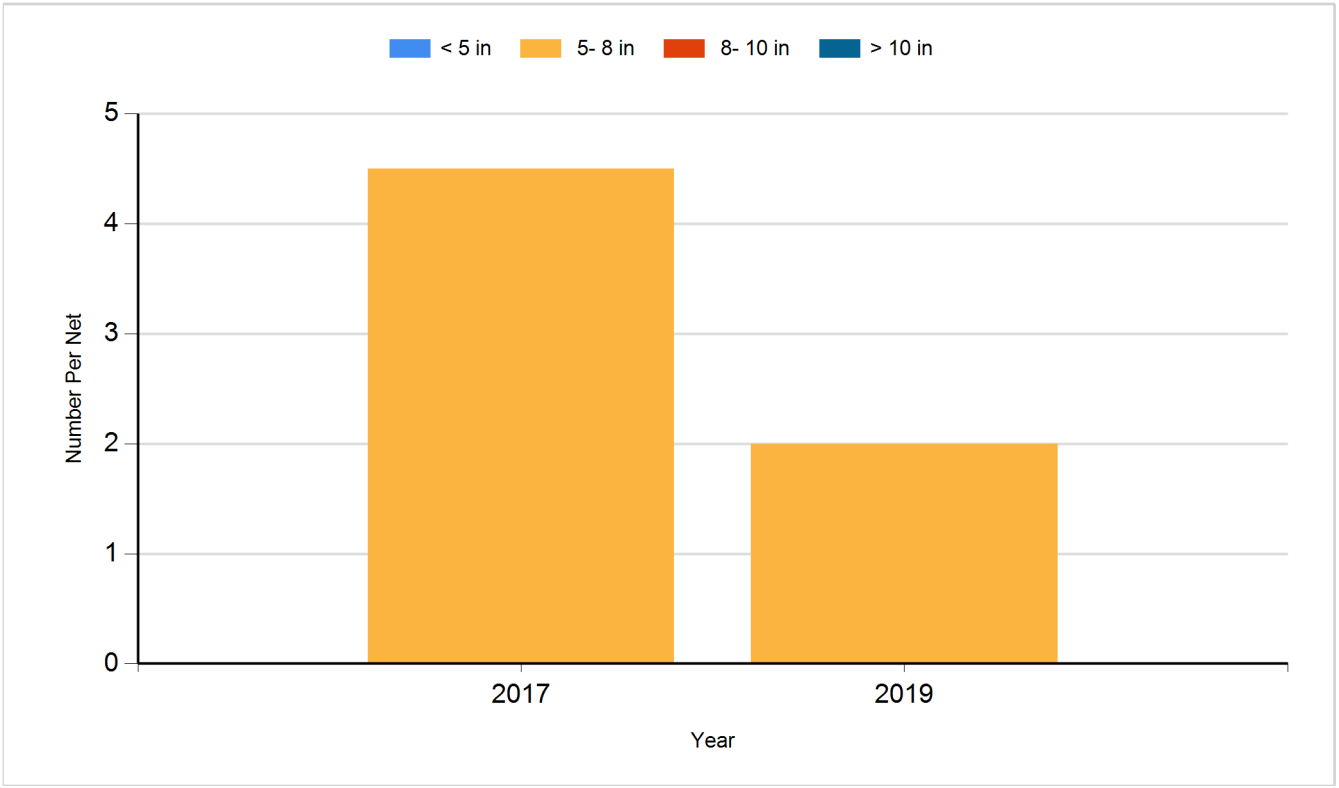
Species: Northern Pike
Gear: AFS std gill net



Species: Northern Pike
Gear: std exp gill net



Species: Yellow Perch
Gear: AFS std gill net



Species: Yellow Perch
Gear: std exp gill net