SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
New Wall, Pennington County
MCE-Lake-9-000
2018

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 (night)	Aug 29, 2018	3600 seconds
boat shocker (night)	Sep 06, 2018	3600 seconds
frame net (std 3/4 in)	Jul 13, 2018	6 net-nights

Common Fish Species Present

Yellow Perch

Northern Pike

Largemouth Bass

Bluegill

Black Crappie

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
boat shocker (night)	Largemouth Bass	164	71.0	9.4	70	5	32	5	100	2
frame net (std 3/4 in)	Black Crappie	130	12.8	13.6	9	5	1		91	1
	Bluegill	62	10.3	8.6	47	9	0		90	2
	Yellow Perch	7	1.2	0.6	71		0		78	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.

		CPUE										
Gear	Species	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Avg
AFS std frame net	Black Crappie									13.3		13.3
	Bluegill									15.7		15.7
	Golden Shiner									0.0		0.0
	Yellow Perch									1.4		1.4
AFS std gill net	Black Crappie									5.0		5.0
	Bluegill									3.0		3.0
	Golden Shiner									0.0		0.0
	Largemouth Bass									2.0		2.0
	Northern Pike									1.5		1.5
	Yellow Perch									4.5		4.5
boat shocker (night)	Largemouth Bass		76.4	43.0	247.9	121.3	97.2	91.5	107.0	169.5	71.0	113.9
frame net (std 3/4 in)	Black Bullhead	0.3										0.3
	Black Crappie	3.0		3.0		45.0		27.0	8.1		12.8	16.5
	Bluegill	9.3		9.0		88.8		65.5	26.9		10.3	35.0
	Golden Shiner					0.0			0.0			0.0
	Largemouth Bass							0.0				0.0
	Northern Pike	0.3		0.1		0.4		0.8	0.5			0.4
	White Crappie	2.6		0.1		4.6		0.9	1.6			2.0
	Yellow Perch	3.6		7.1		4.0		3.9	1.9		1.2	3.6
std exp gill net	Black Crappie			25.0		22.0		1.5				16.2
	Bluegill					8.0		5.5				6.8
	Golden Shiner			0.0		0.0		0.0				0.0
	Largemouth Bass					1.0						1.0
	Northern Pike	0.5		4.0		3.0		1.5				2.3
	White Crappie			5.0								5.0
	Yellow Perch	126.0		136.0		13.0		0.5				68.9

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	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
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	
		PSD-P									0	
		Wr									92	
	Bluegill	PSD									100	
		PSD-P									0	
		Wr									94	
	Largemouth Bass	PSD									25	
		PSD-P									25	
		Wr									102	
	Northern Pike	PSD									100	
		PSD-P									100	
		Wr									94	
	Yellow Perch	PSD									0	
		PSD-P									0	
		Wr									85	
boat shocker (night)	Largemouth Bass	PSD		18	33	69	44	72	87	71	58	70
		PSD-P		10	12	9	22	47	51	28	30	32
		Wr		105	102	113	116	113	101	107	106	100
frame net (std 3/4 in)	Black Crappie	PSD	29		54		9		6	25		9
		PSD-P	0		0		1		0	4		1
		Wr	99		113		95		104	101		91
	Bluegill	PSD	80		88		25		23	42		47
		PSD-P	0		3		0		1	0		0

			Year									
Gear	Species	Index	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
frame net (std 3/4 in)	Bluegill	Wr	109		114		96		105	114		90
	Largemouth Bass	PSD							0			
		PSD-P							0			
	Northern Pike	PSD	50		100		100		50	80		
		PSD-P	0		100		67		33	0		
		Wr	89		125		99		92	96		
	Yellow Perch	PSD	0		53		59		13	26		71
		PSD-P	0		0		6		0	5		0
		Wr			93		79		92	89		78
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	100		25		100		100			
		PSD-P	100		25		33		100			
		Wr	120		102		108		102			
	Yellow Perch	PSD	1		25		0		0			
		PSD-P	0		0		0		0			
		Wr	96		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)				
2009	122			156 (66)	171 (52)	192 (4)					

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)		

Species: Yellow Perch

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2009	500			162 (174)	179 (327)						

Fish Condition

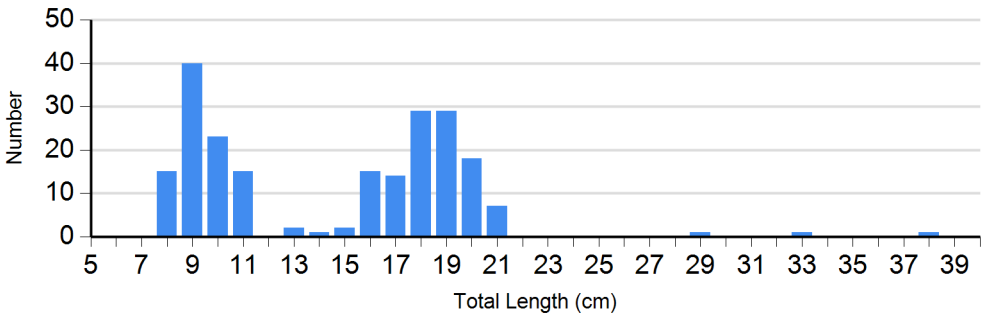
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	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	70	93 (1.0)	6	82 (3.7)	0		1	69
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	
Largemouth Bass Electro Fishing	2014	46	111 (1.0)	40	112 (1.2)	76	114 (0.8)	0	
	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	
Northern Pike Gill Net	2015	0		0		6	102 (2.6)	0	
	2017	0		0		3	94 (1.4)	0	
Yellow Perch Gill Net	2015	2	92 (0.0)	0		0		0	
	2017	9	85 (1.9)	0		0		0	

Length Frequency Distribution

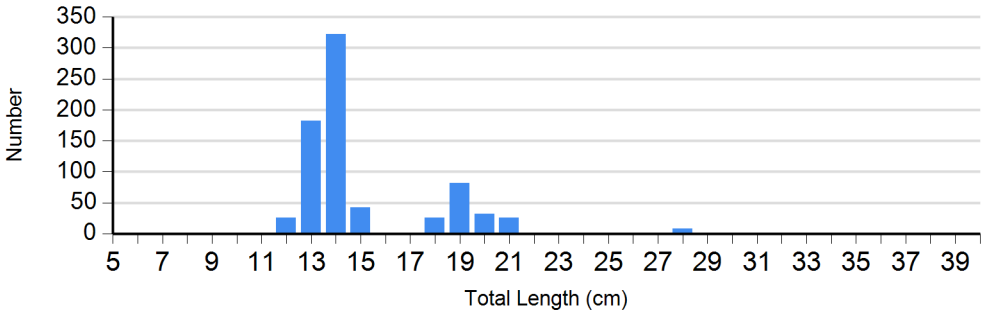
Length frequency histogram of species sampled by year.

Species: Black Crappie
Gear: AFS std frame net

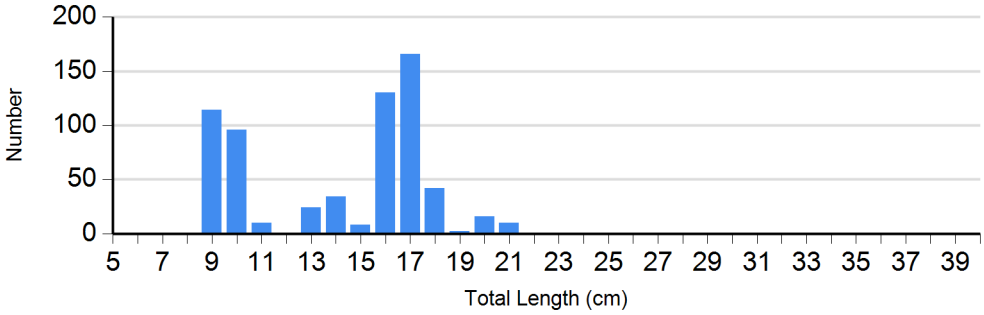


2017

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



2013



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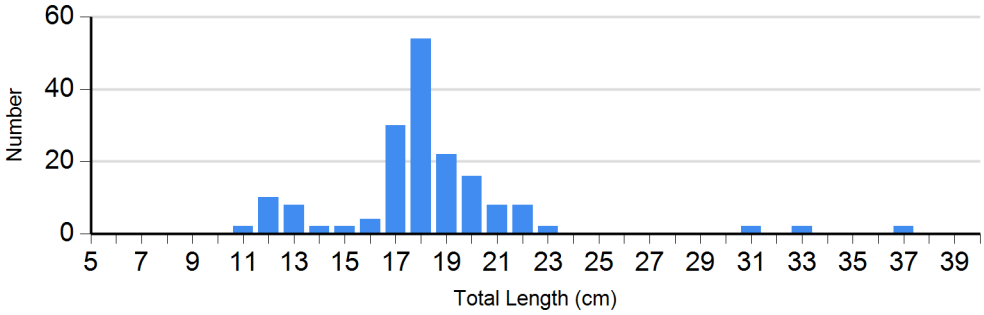

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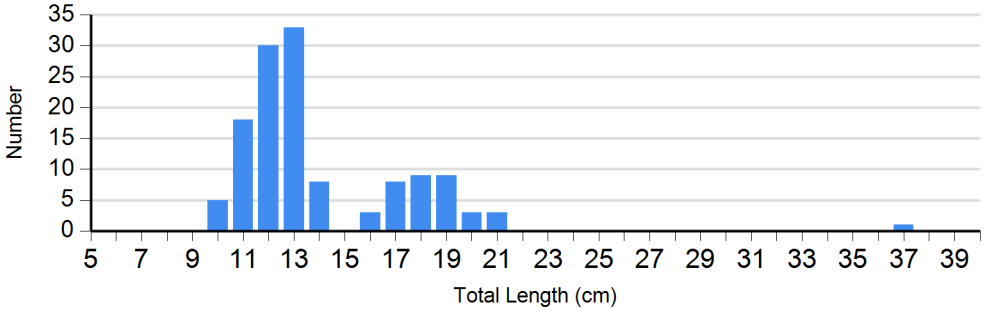
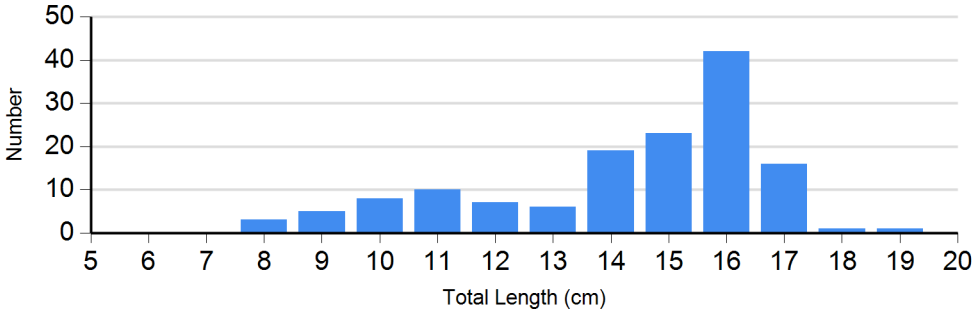


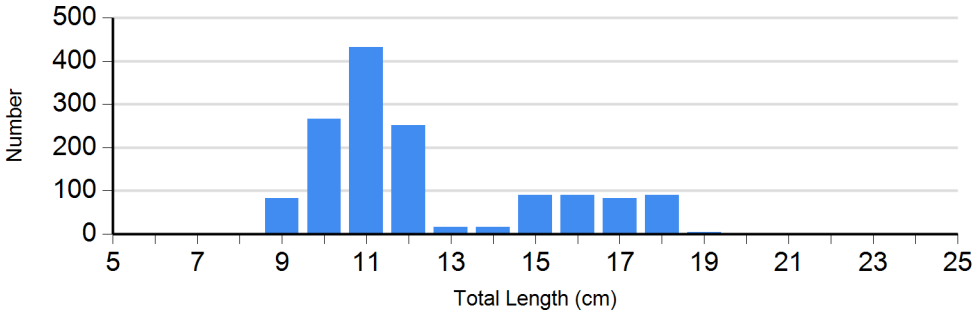
2018

Species: Bluegill
Gear: AFS std frame net



2017

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



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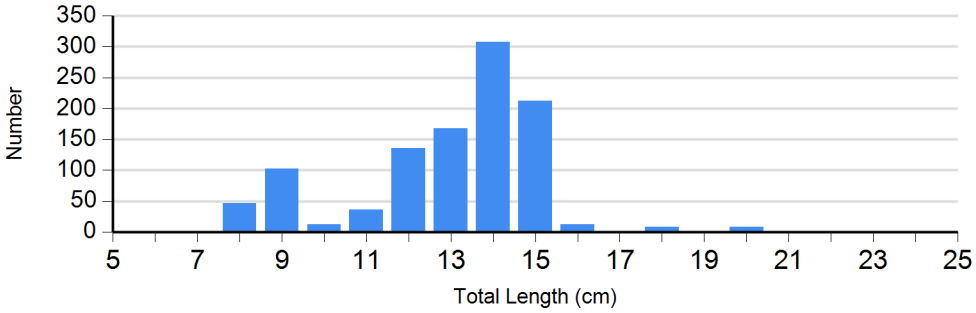

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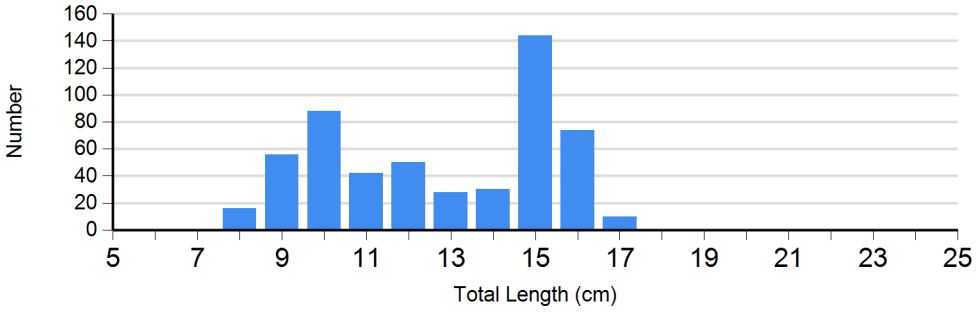

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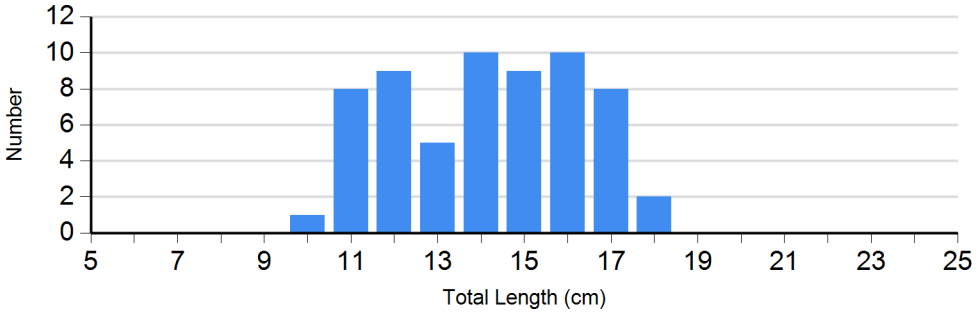
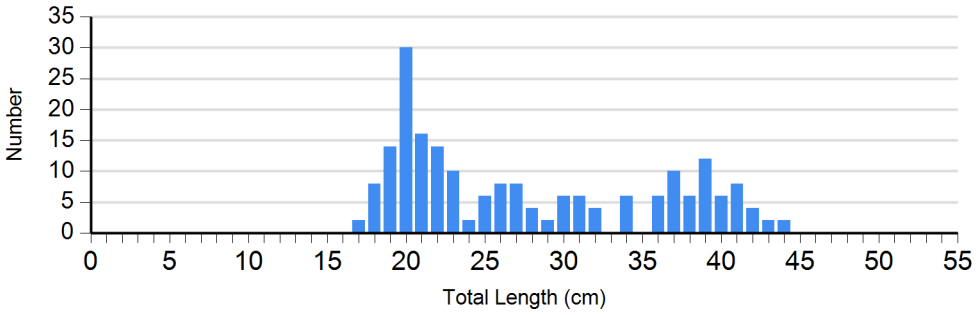


2018

Species: Largemouth Bass
Gear: boat shocker (night)



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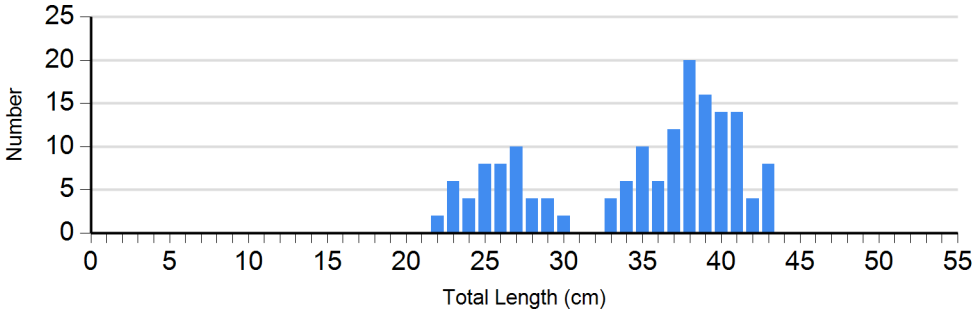
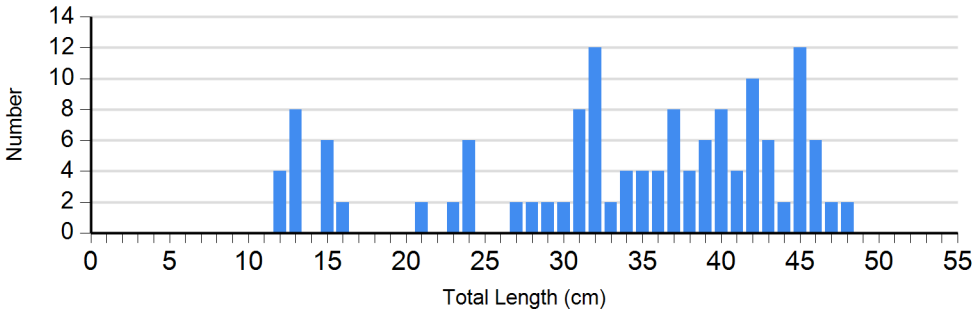
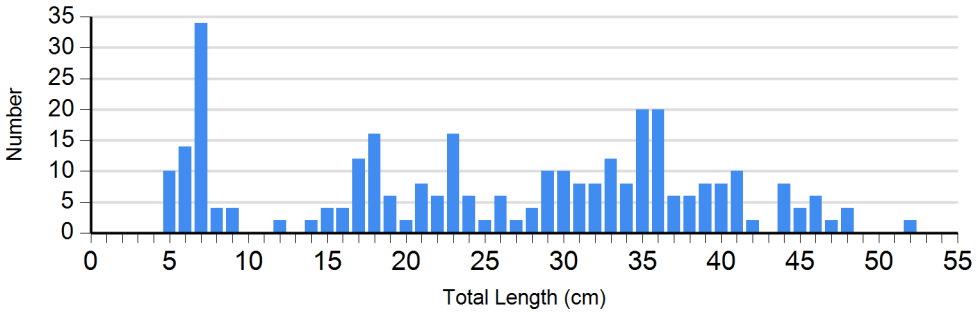


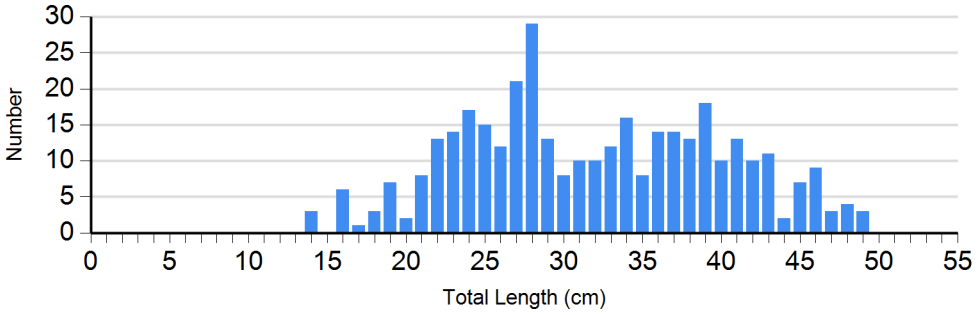
2014



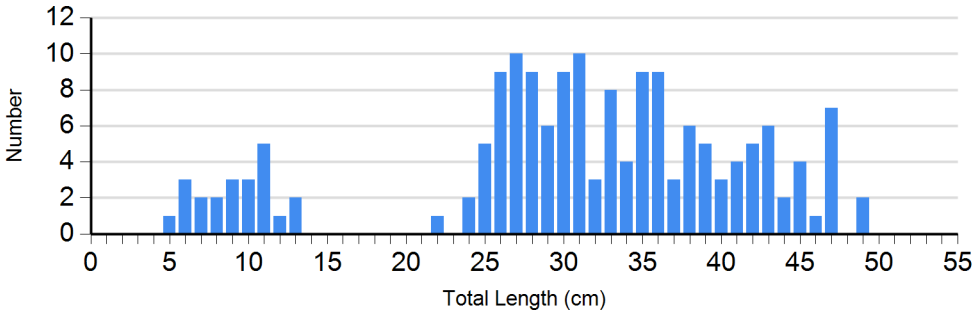
2015



2016

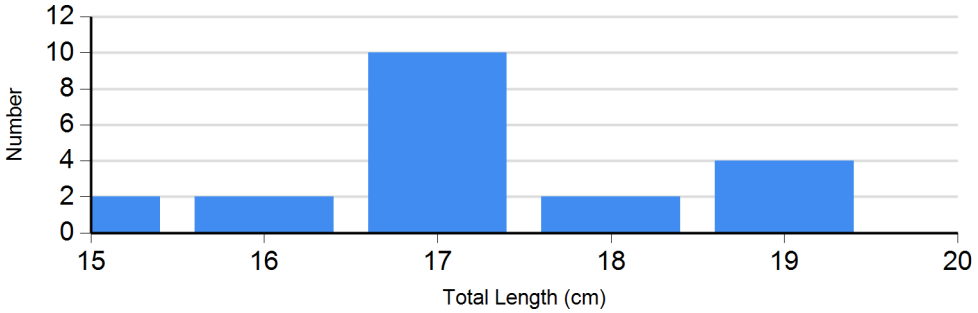


2017



2018

Species: Yellow Perch
Gear: std exp gill net

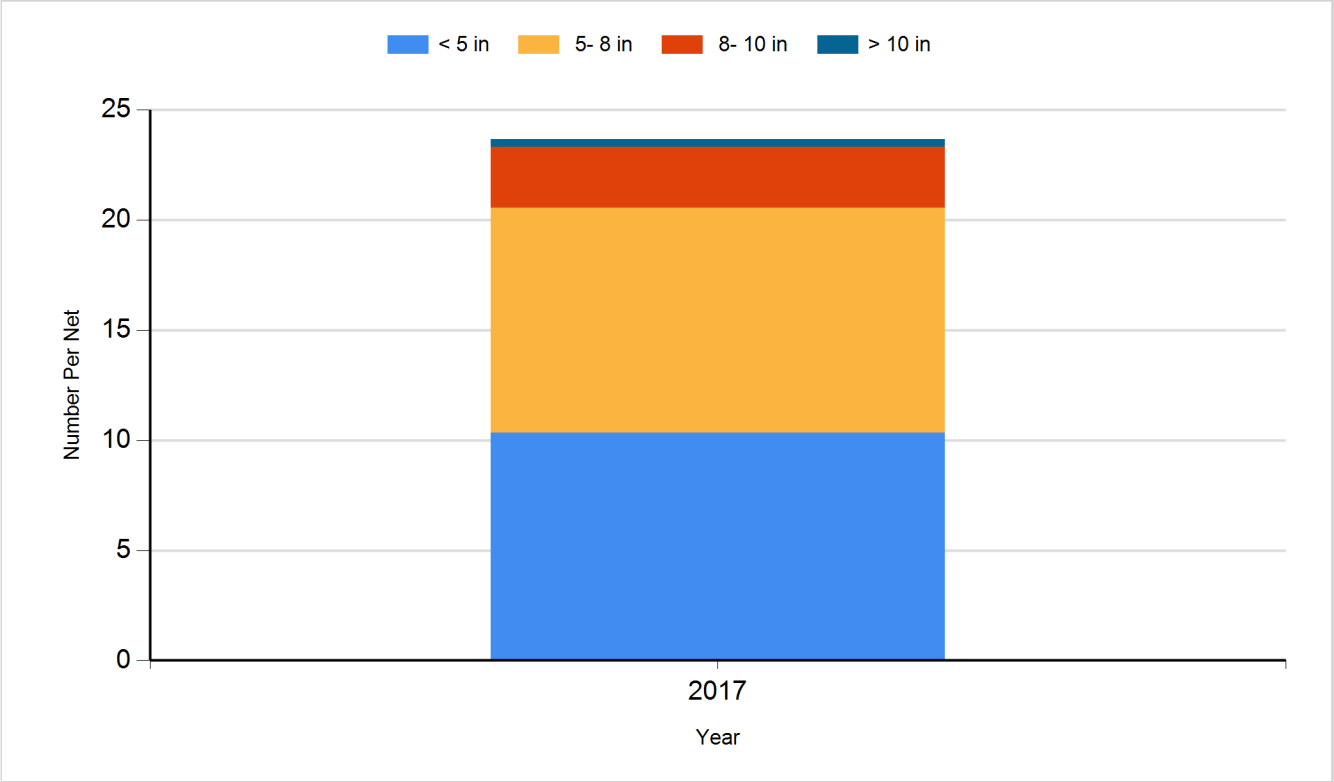


2013

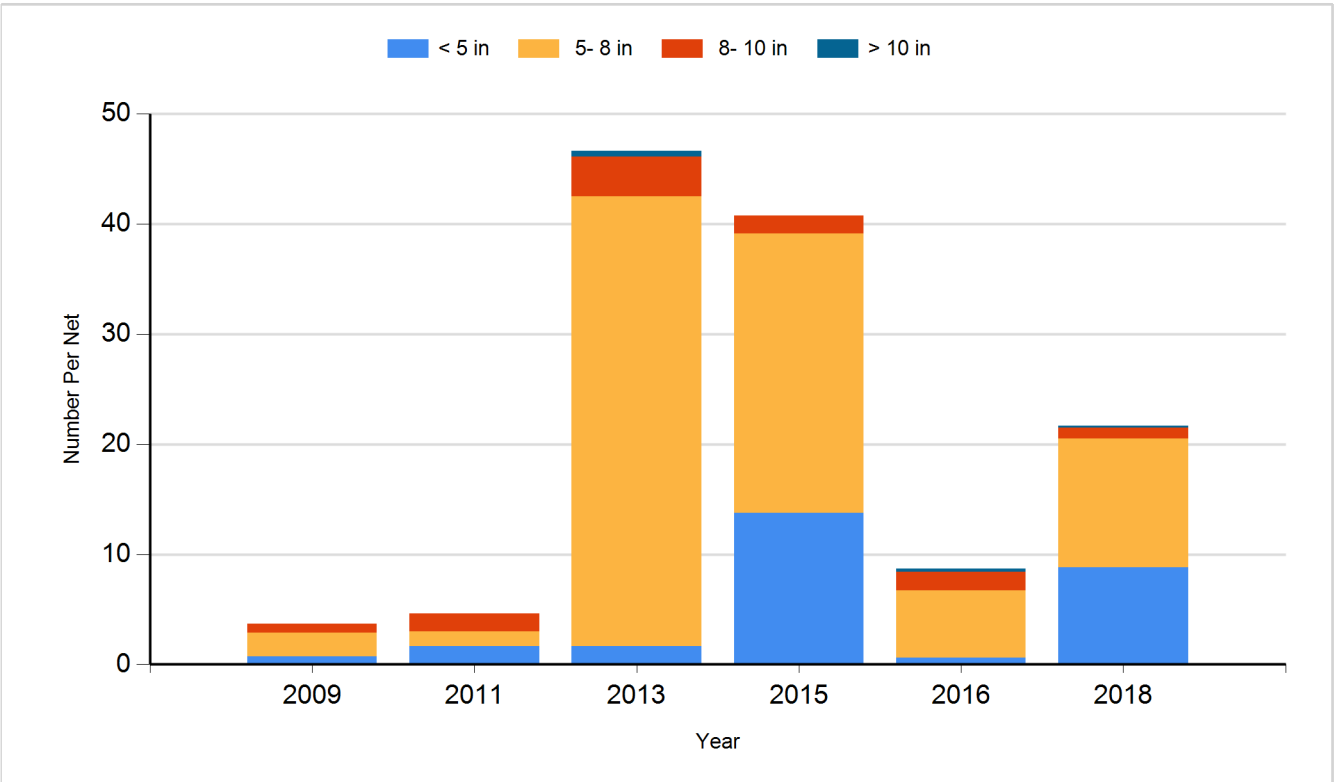
Historic Fish Sizes and Relative Abundance

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

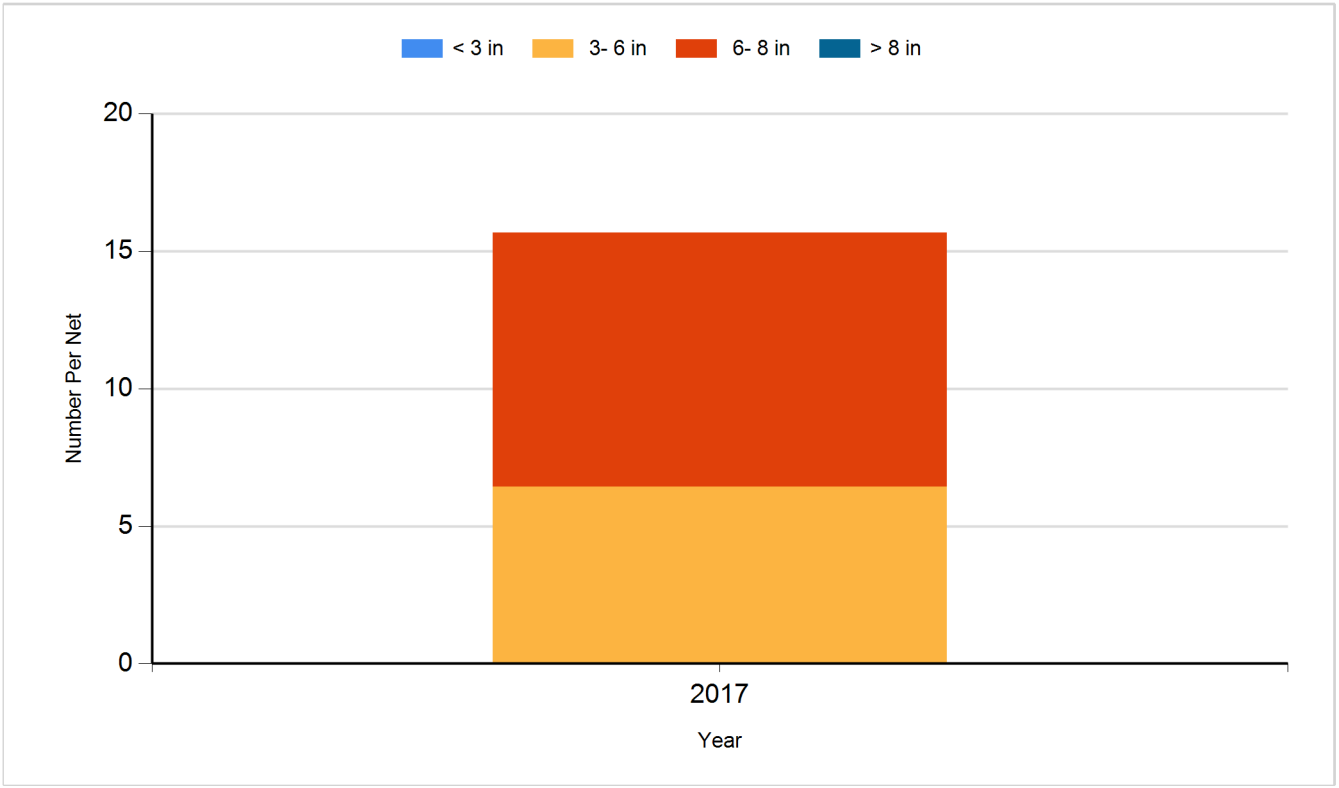
Species: Black Crappie
Gear: AFS std frame net



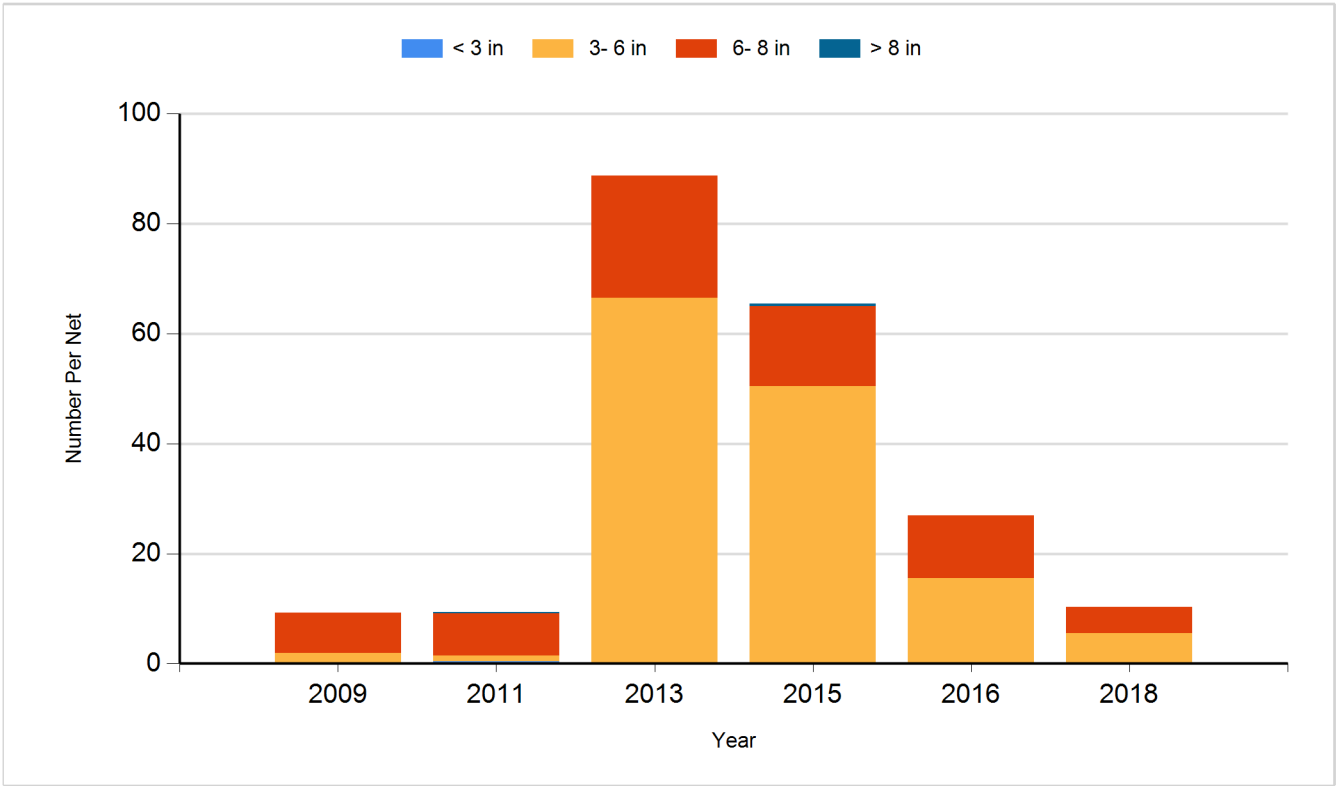
Species: Black Crappie
Gear: frame net (std 3/4 in)



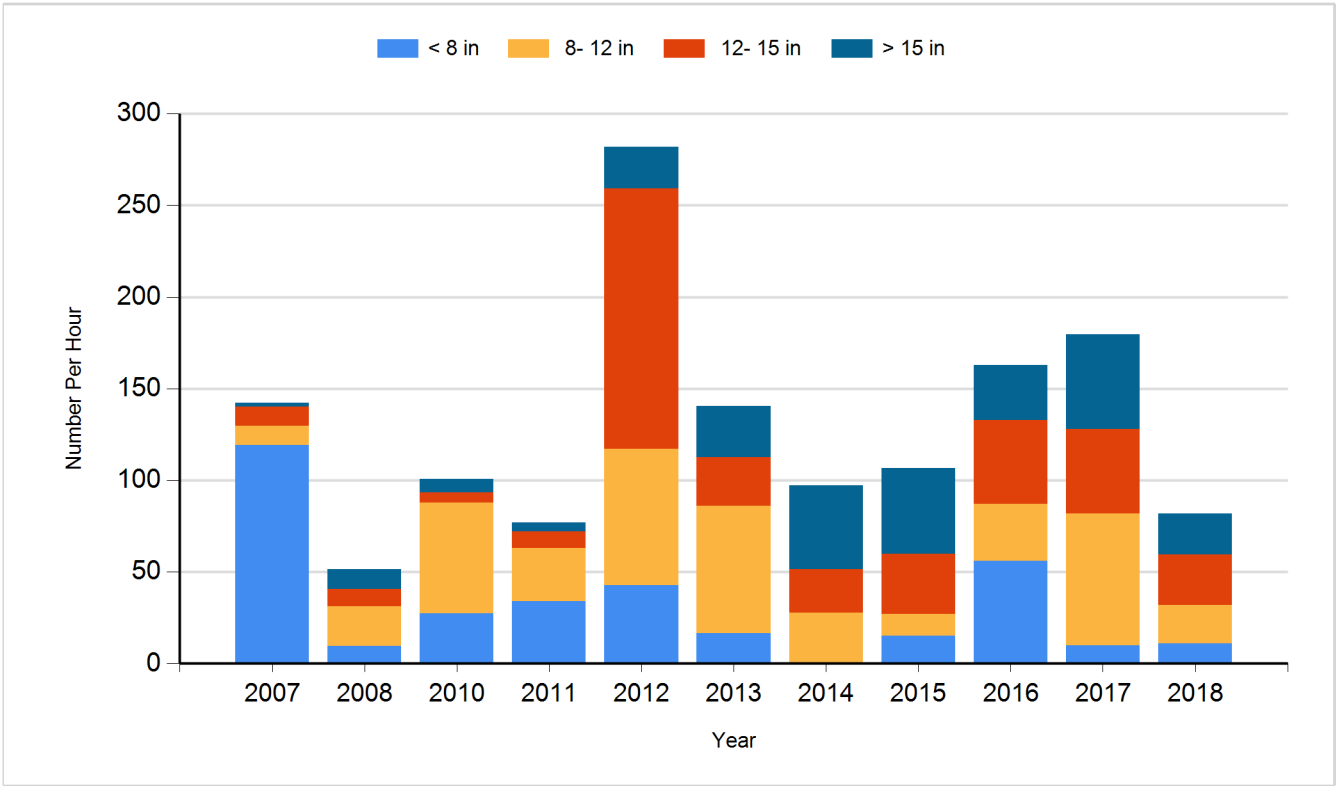
Species: Bluegill
Gear: AFS std frame net



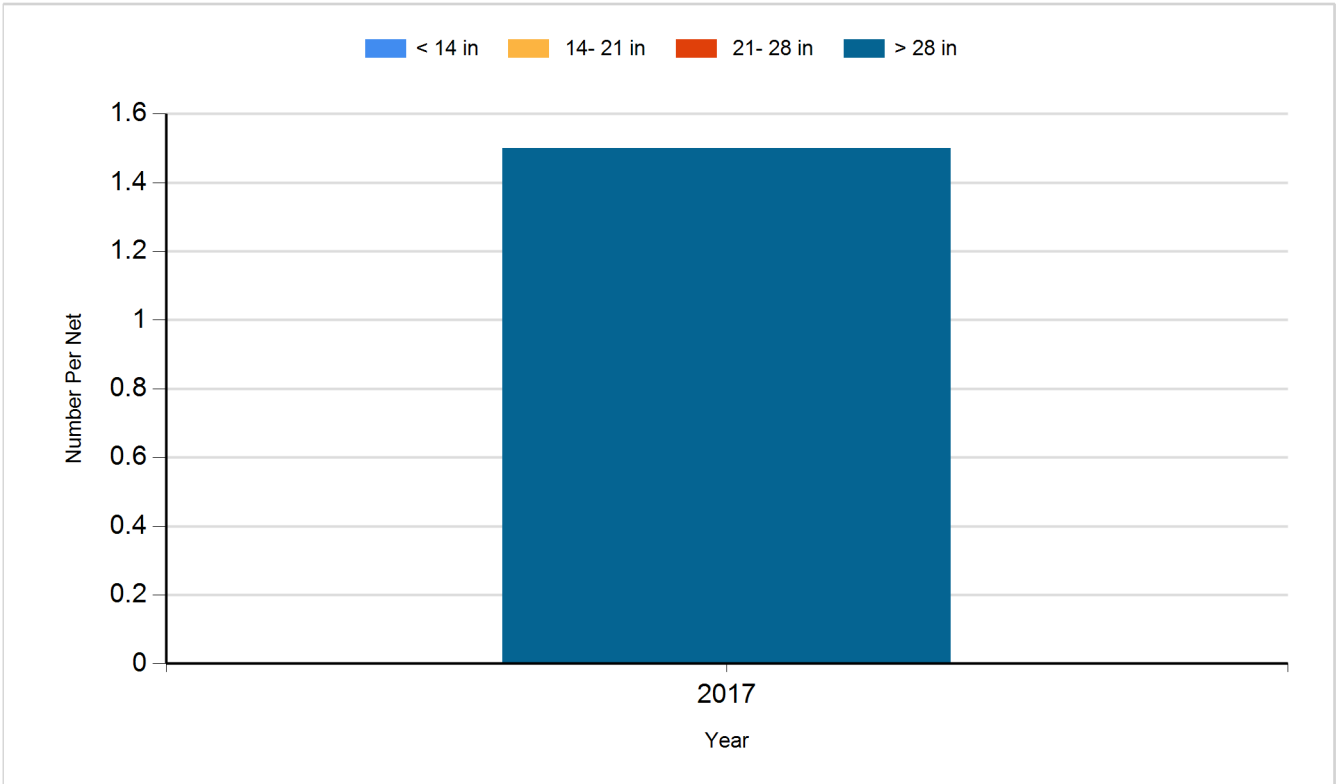
Species: Bluegill
Gear: frame net (std 3/4 in)



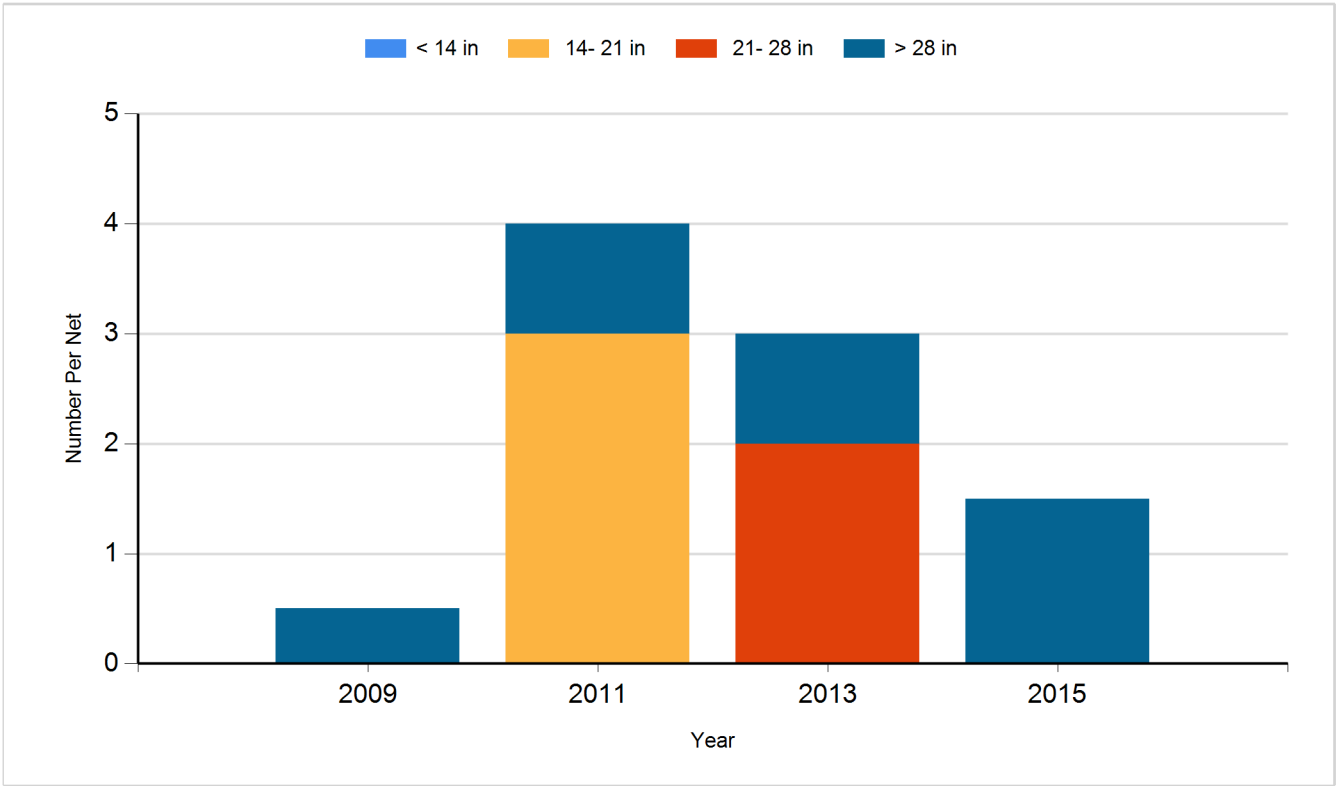
Species: Largemouth Bass
Gear: boat shocker (night)



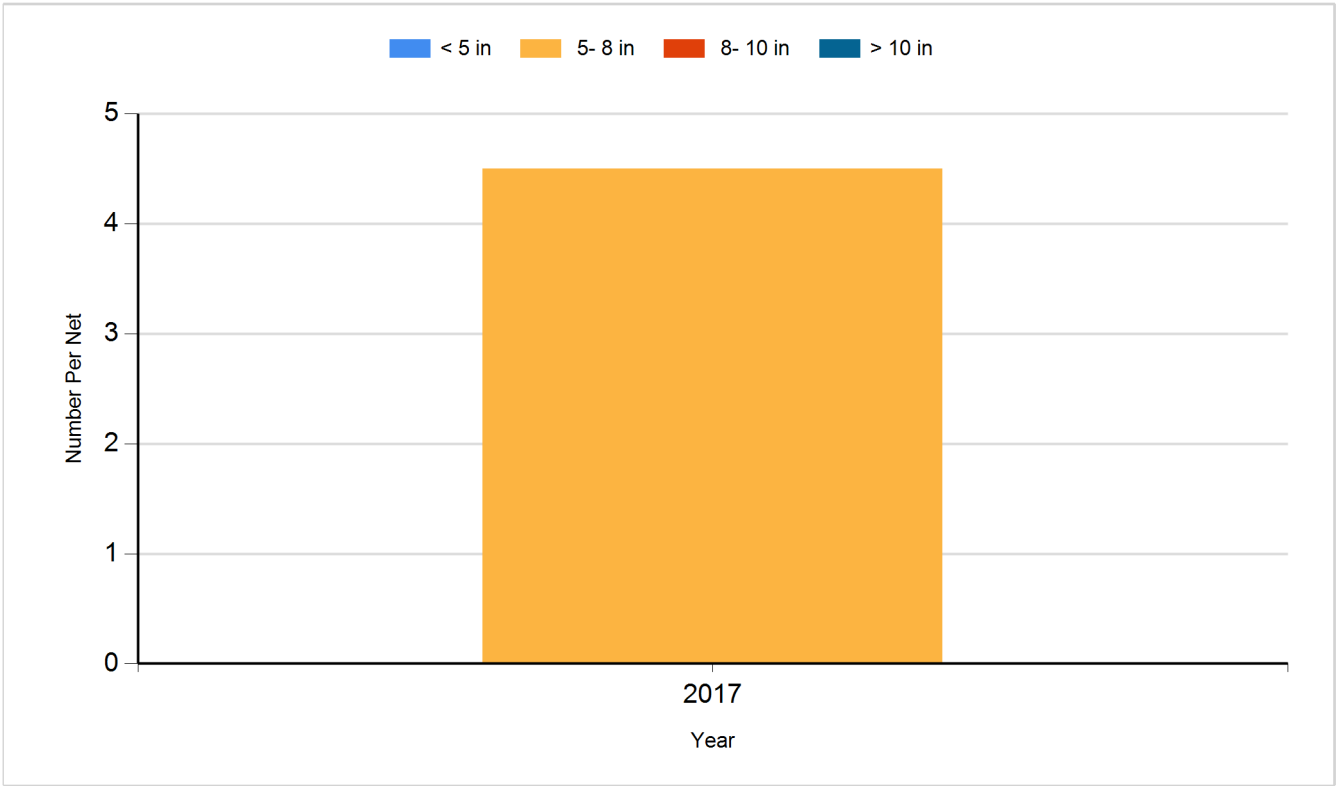
Species: Northern Pike
Gear: AFS std gill net



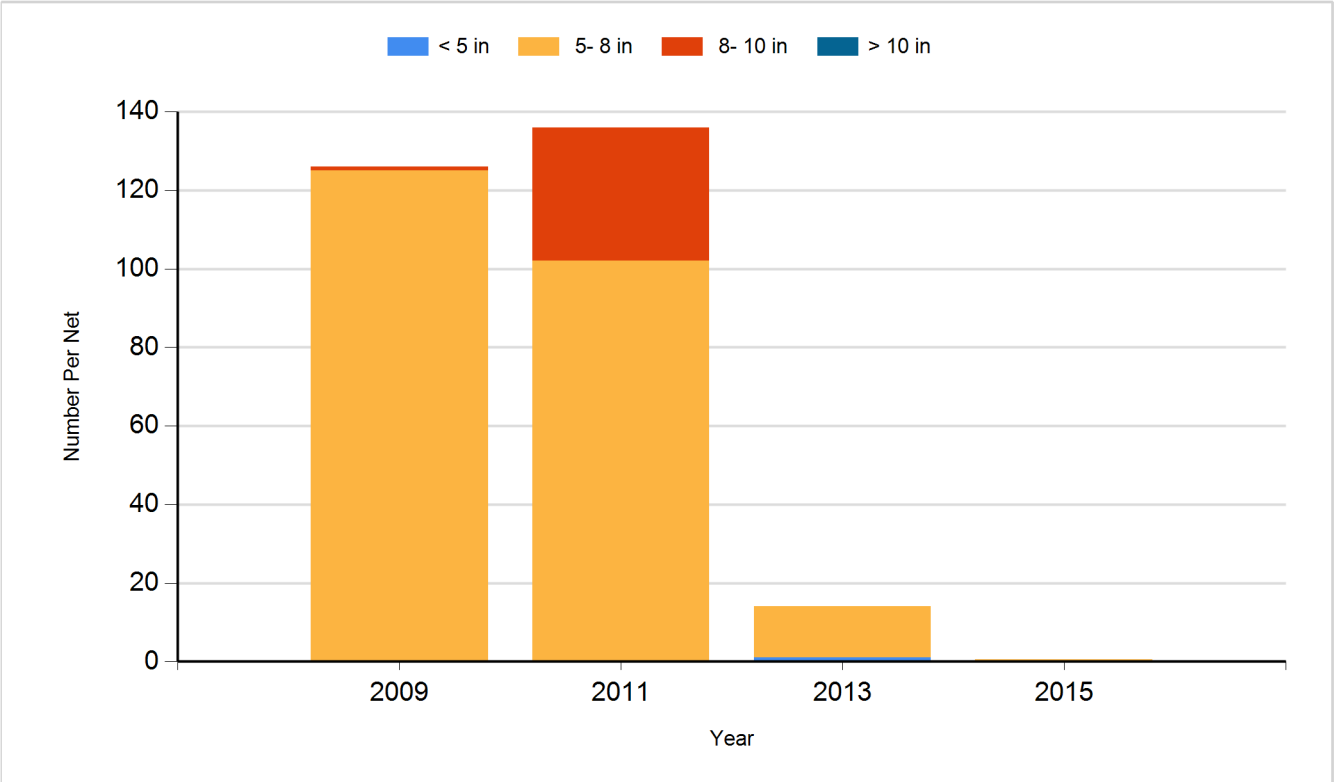
Species: Northern Pike
Gear: std exp gill net



Species: 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
2007	Largemouth Bass	Adult	150
2009	Largemouth Bass	Fingerling	3,700