SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

Henry, Bon Homme County

LJA-Lake-588-000

2018

Lake Information

Name: Henry

County: Bon Homme

Legal Description: T96-R58-Sec.9-10

Surface Area: 104 Acres

Maximum Depth: 37 Feet

Mean Depth: 14 Feet

Surveys and Investigations

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

Gear	Date	Effort
frame net (std 3/4 in)	May 16, 2018	5 net-nights

Common Fish Species Present

Largemouth Bass

Black Crappie

Bluegill

White Sucker

Yellow Perch

Common Carp

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	52	10.4	7.6	23	9	10	7	93	2
	Bluegill	25	5.0	3.7	32	15	0		88	3
	Common Carp	1	0.2	0.3	0		0			
	White Sucker	5	1.0	0.7	100		100			
	Yellow Perch	2	0.4	0.6	0		0		76	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 Bullhead									0.4		0.4
	Black Crappie									4.0		4.0
	Bluegill									1.8		1.8
	Green Sunfish									0.2		0.2
	White Sucker									1.0		1.0
AFS std gill net	Black Bullhead									0.3		0.3
	Black Crappie									3.0		3.0
	Common Carp									0.0		0.0
	Green Sunfish									0.2		0.2
	Largemouth Bass									0.2		0.2
	Saugeye									0.2		0.2
	White Sucker									4.0		4.0
	Yellow Perch									5.0		5.0
boat shocker (night)	Largemouth Bass	35.3				33.0	37.5	25.5				32.8
frame net (std 3/4 in)	Black Bullhead	2.9		1.5		0.7	0.3		0.2			1.1
	Black Crappie	30.3		20.0		16.1	16.0	16.9	2.2		10.4	16.0
	Bluegill	12.0		54.4		21.1	24.6	20.5	16.1		5.0	22.0
	Channel Catfish						0.9	0.1	0.1			0.4
	Common Carp	0.2		0.2		0.4		0.1	0.1		0.2	0.2
	Green Sunfish	0.2		0.1					0.1			0.1
	Largemouth Bass			0.1		0.1						0.1
	Sunfish Hybrid	0.0										0.0
	Walleye								0.0			0.0
	White Sucker	6.2		1.8		3.5	2.0	0.6	0.4		1.0	2.2
	Yellow Perch	0.2		0.1			0.1		0.4		0.4	0.2

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									65	
		PSD-P									20	
		Wr									89	
	Bluegill	PSD									78	
		PSD-P									0	
		Wr									99	
	White Sucker	PSD									100	
		PSD-P									80	
AFS std gill net	Black Crappie	PSD									33	
		PSD-P									6	
		Wr									96	
	Common Carp	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 (night)	Largemouth Bass	PSD	28				76	93	78			
		PSD-P	9				41	35	29			
		Wr	96				98	89	92			
frame net (std 3/4 in)	Black Crappie	PSD	67		6		94	96	36	41		23
		PSD-P	2		0		0	0	0	9		10
		Wr	96		96		86	91	93	97		93
	Bluegill	PSD	88		18		100	90	84	58		32
		PSD-P	3		0		0	0	2	2		0
		Wr	88		94		83	92	90	107		88
	Common Carp	PSD	100		50		100		100	100		0
		PSD-P	0		0		100		100	100		0

			Year									
Gear	Species	Index	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
frame net (std 3/4 in)	Common Carp	Wr	92		83		80					
	Largemouth Bass	PSD			100		100					
		PSD-P			0		100					
		Wr			110		95					
	White Sucker	PSD	100		100		100	100	100	75		100
		PSD-P	98		100		100	100	100	75		100
		Wr	87		84		79					
	Yellow Perch	PSD	50		0			100		25		0
		PSD-P	0		0			0		0		0
		Wr	85		81			82		135		76

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)						
2011	204	145 (193)	226 (9)	244 (2)							
2009	308	149 (89)	196 (73)	236 (126)	238 (20)						

Species: Bluegill

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
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)						
2011	544	98 (164)	133 (243)	148 (125)	191 (5)	173 (7)					
2009	117		129 (8)	177 (52)	180 (43)	193 (14)					

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)
2009	49		224 (24)	260 (8)	288 (11)	342 (5)	438 (2)				

Fish Condition

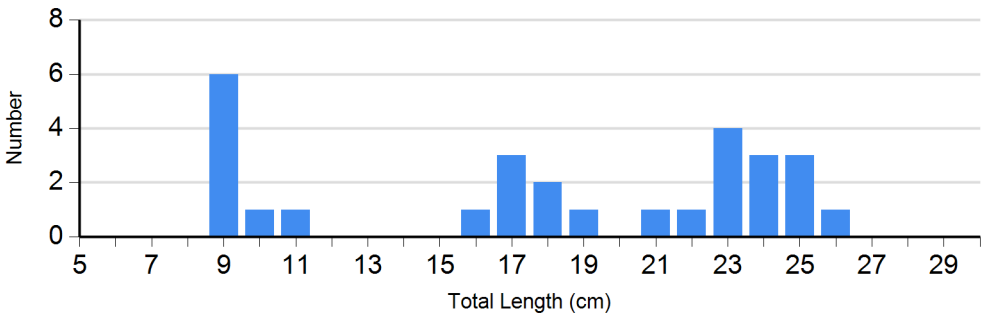
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2014	7	99 (3.1)	153	90 (0.6)	0		0	
	2015	109	96 (1.1)	60	91 (0.7)	0		0	
	2016	13	104 (3.0)	7	87 (1.8)	2	83 (4.0)	0	
	2017	7	98 (3.1)	9	84 (1.0)	4	81 (1.8)	0	
	2018	40	96 (1.5)	7	87 (2.4)	5	77 (2.1)	0	
Bluegill Frame Net	2014	24	99 (3.0)	222	90 (0.6)	0		0	
	2015	33	89 (1.2)	168	90 (0.7)	4	89 (5.3)	0	
	2016	67	107 (1.3)	91	108 (1.4)	3	99 (1.1)	0	
	2017	2	106 (12.6)	7	96 (3.6)	0		0	
	2018	17	89 (2.8)	8	88 (1.8)	0		0	
Largemouth Bass Electro Fishing	2014	5	89 (3.7)	44	89 (1.2)	25	88 (1.8)	1	92
	2015	11	89 (4.3)	25	92 (1.5)	12	96 (1.5)	3	89 (8.7)
Yellow Perch Gill Net	2017	19	87 (1.5)	11	80 (2.6)	0		0	

Length Frequency Distribution

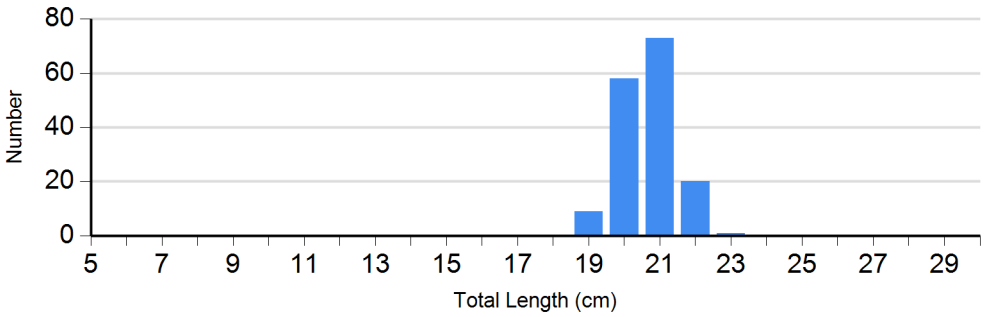
Length frequency histogram of species sampled by year.

Species: Black Crappie
Gear: AFS std frame net

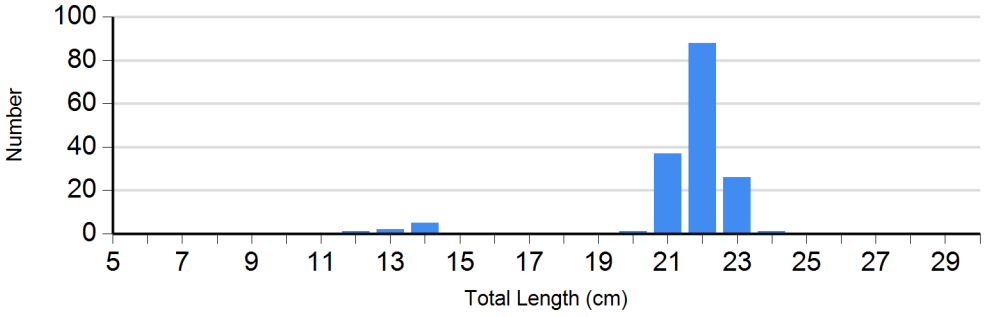


2017

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



2013



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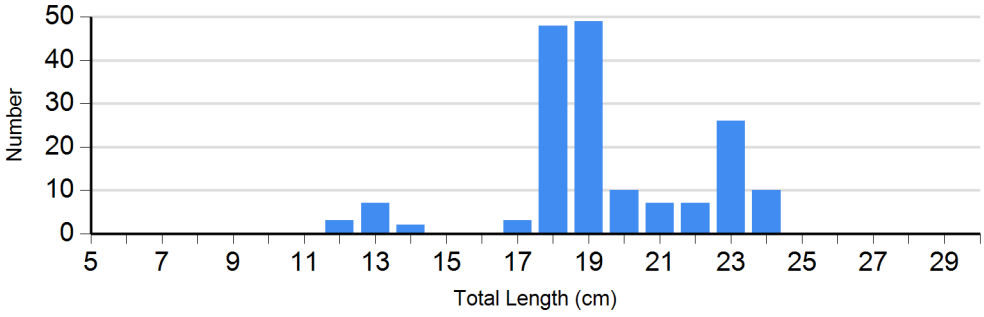

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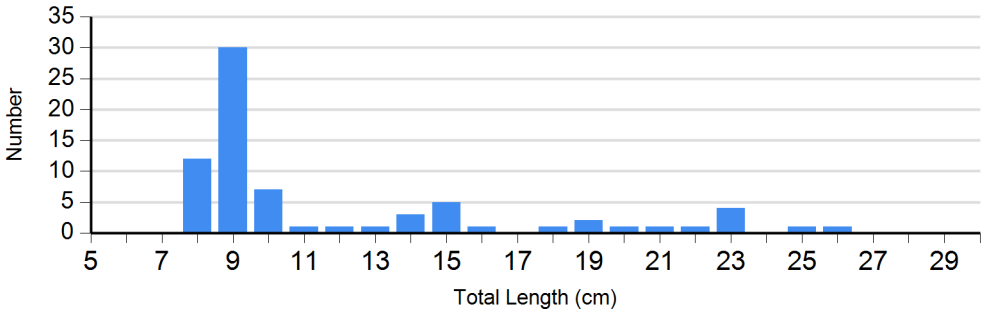
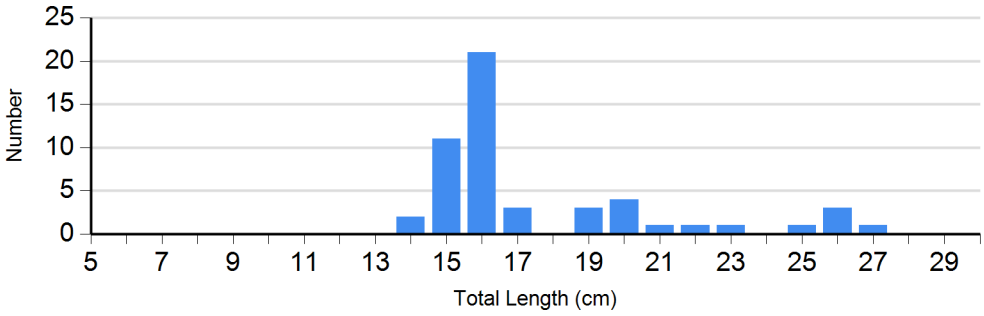
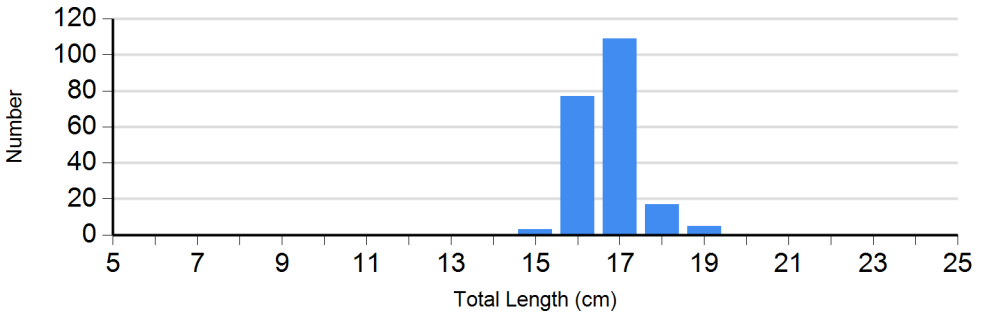


2016

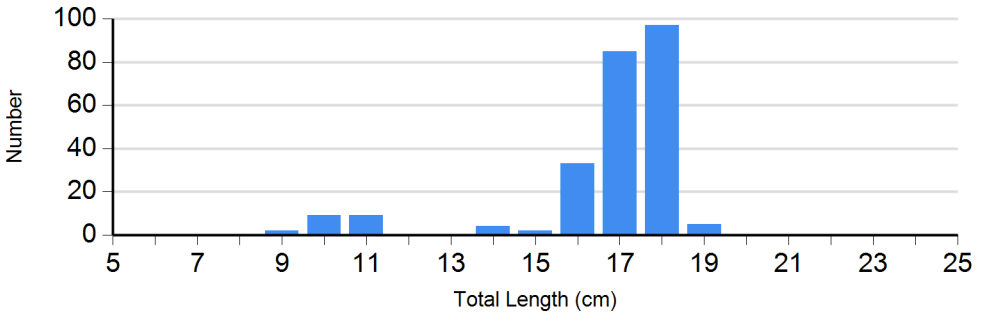


2018

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



2013



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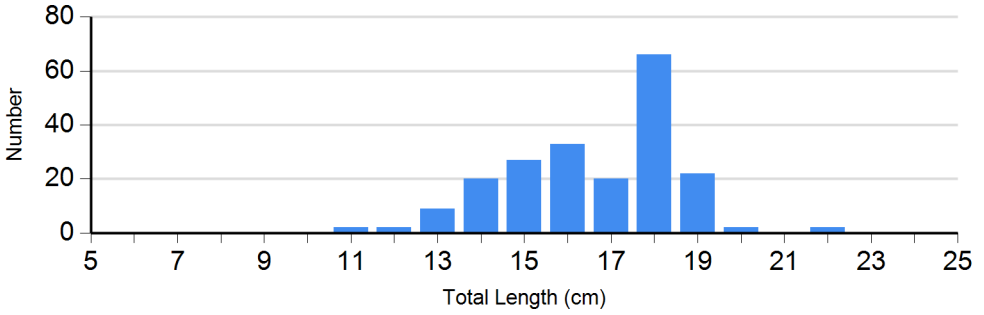
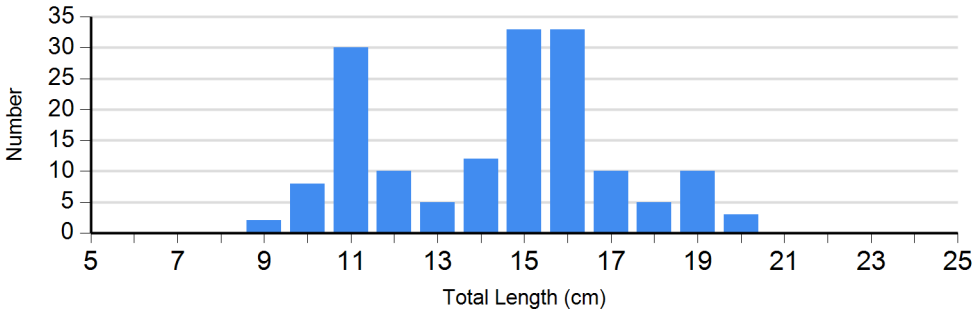


2015



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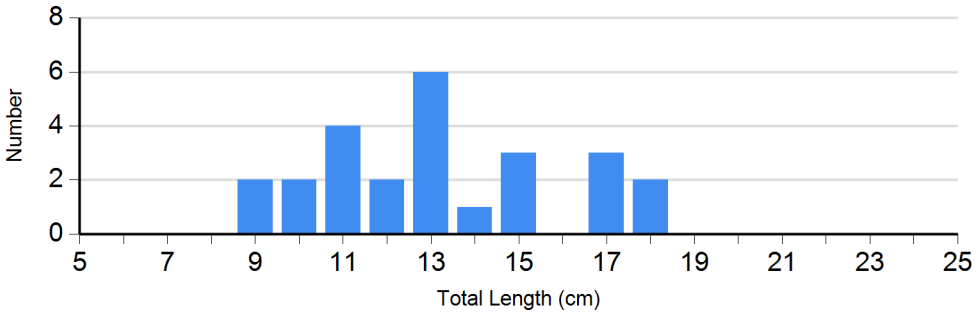
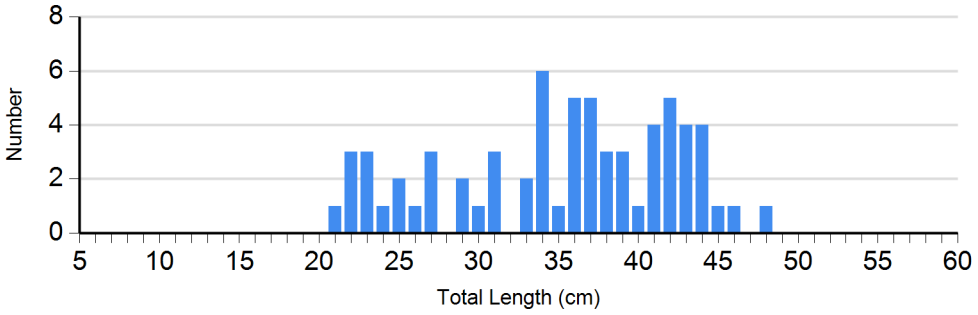
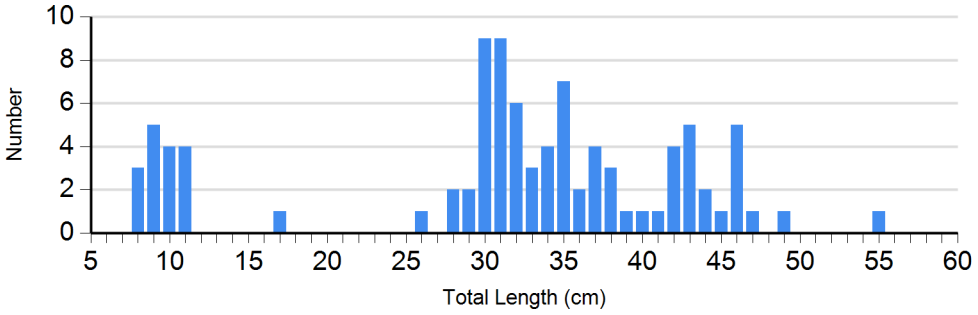


2018

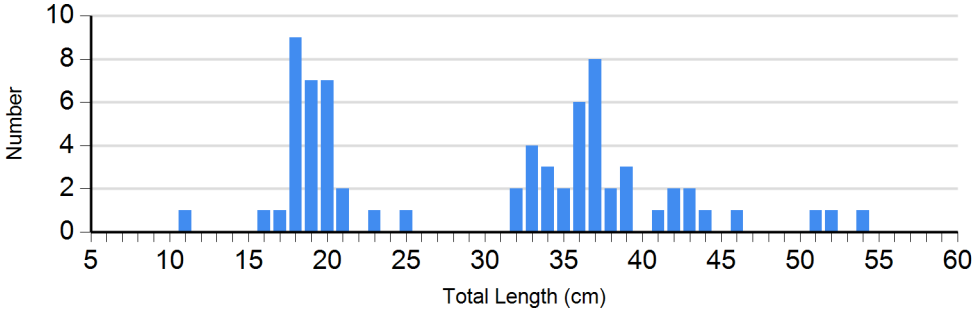
Species: Largemouth Bass
Gear: boat shocker (night)



2013

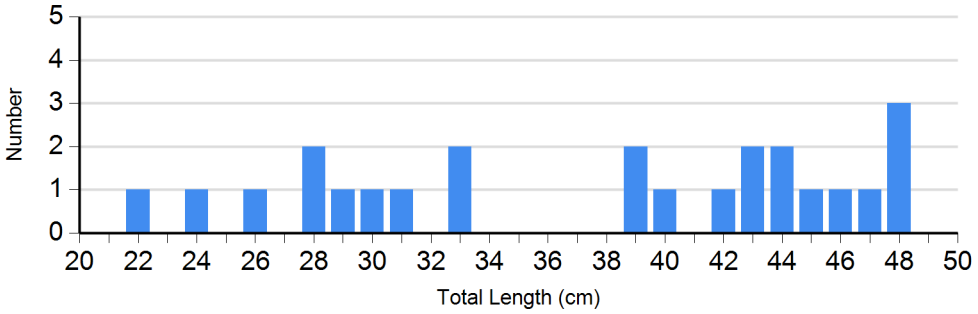


2014



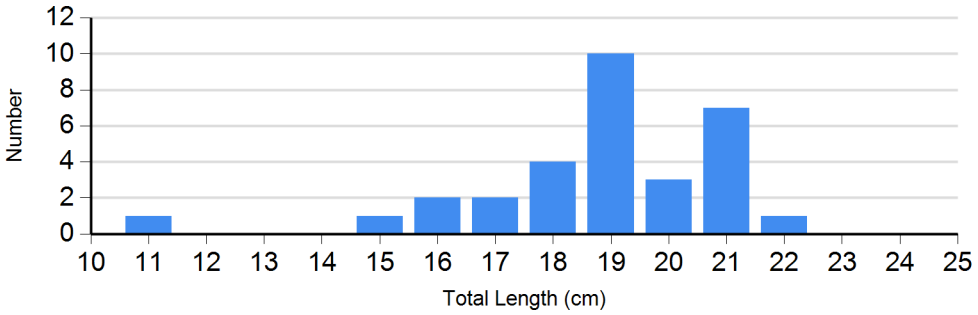
2015

Species: White Sucker
Gear: AFS std gill net



2017

Species: Yellow Perch
Gear: AFS std gill net

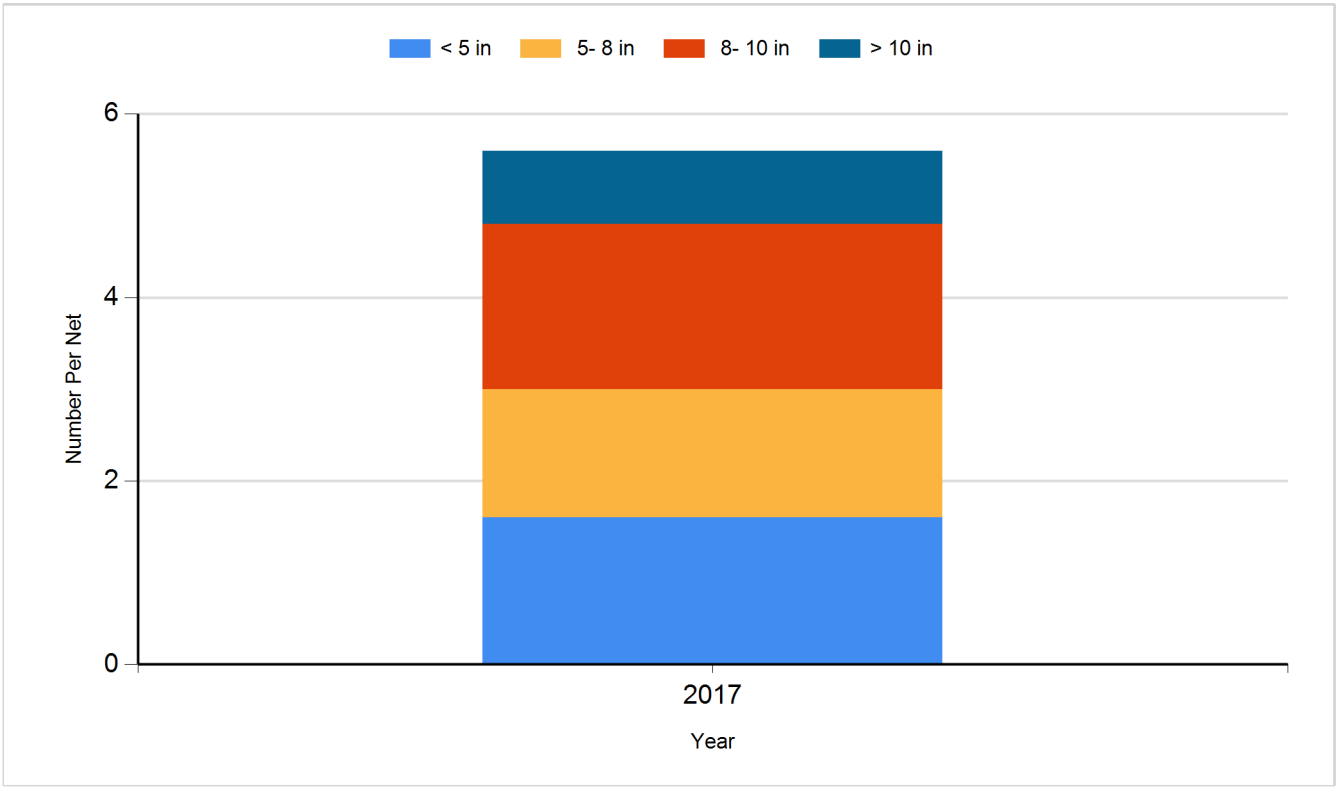


2017

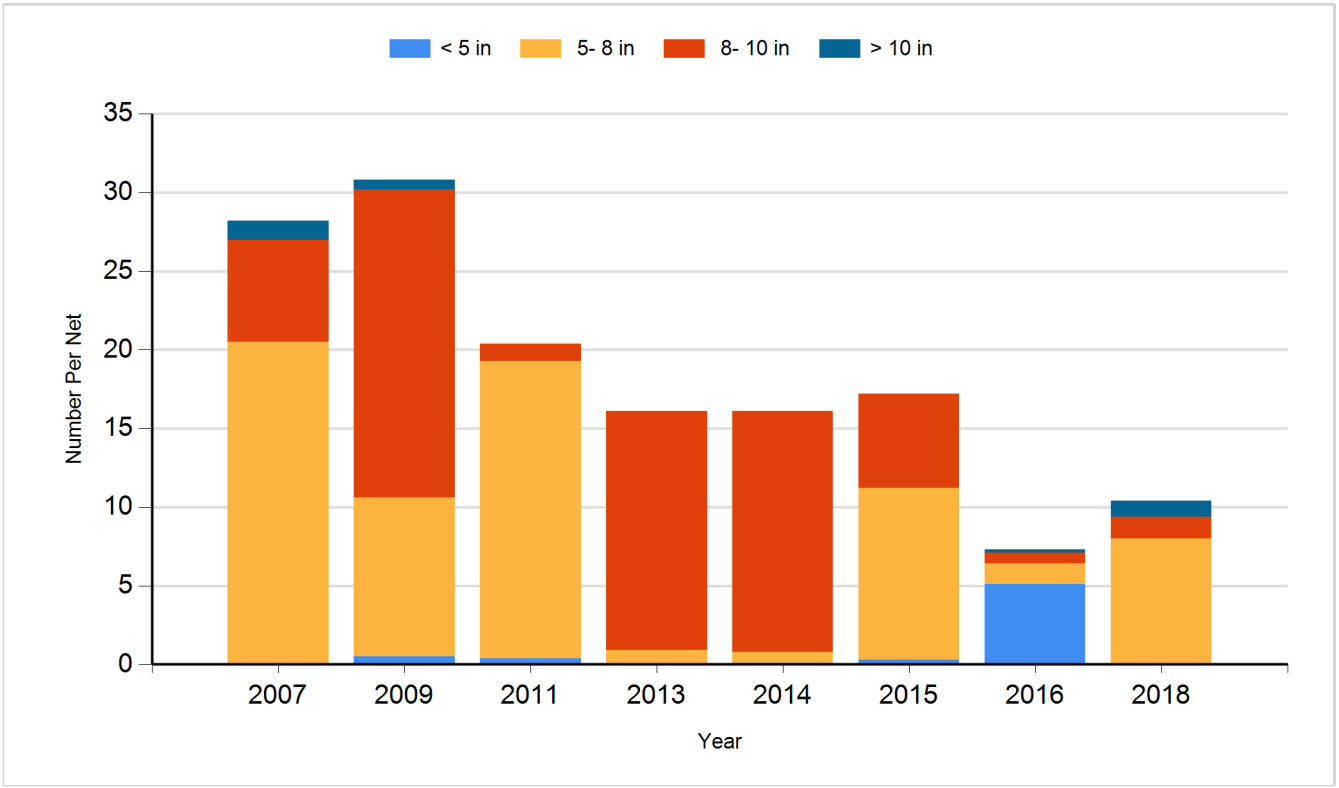
Historic Fish Sizes and Relative Abundance

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

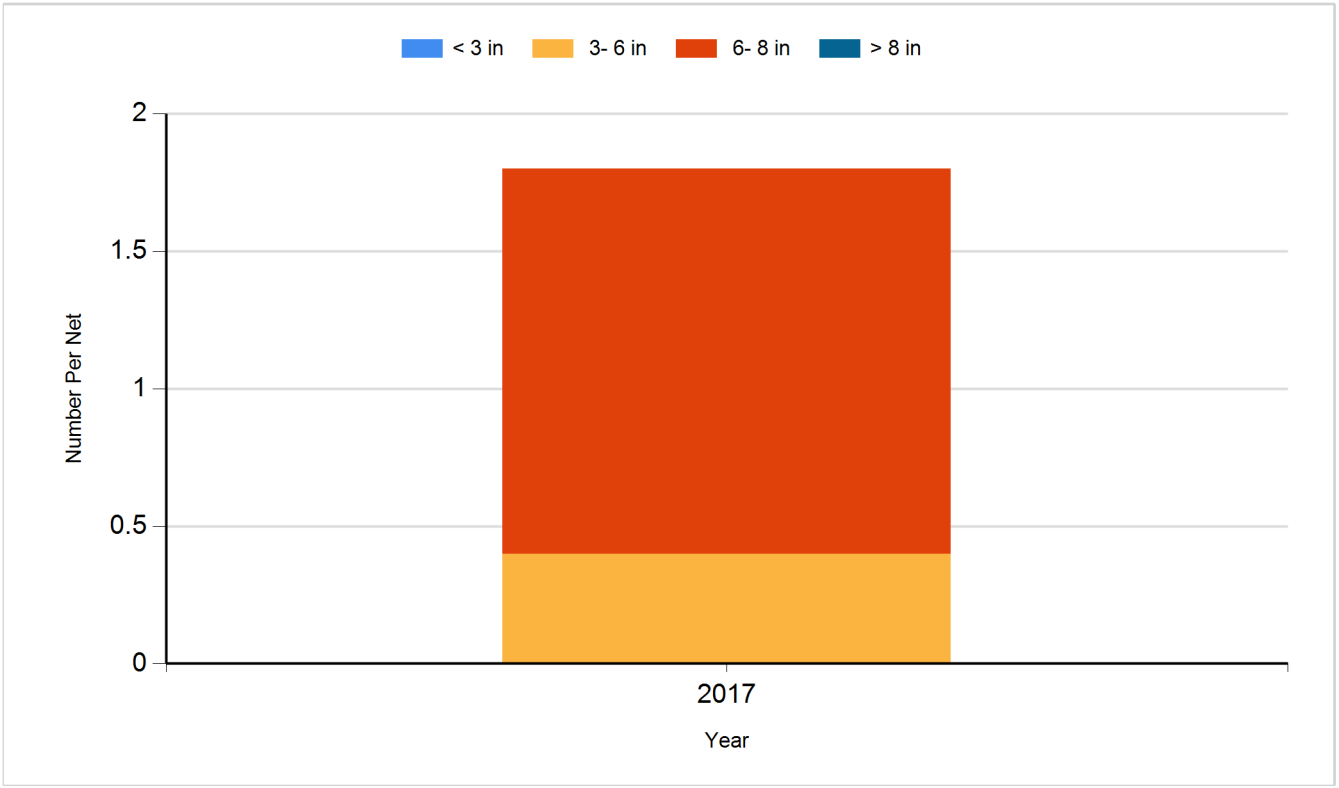
Species: Black Crappie
Gear: AFS std frame net



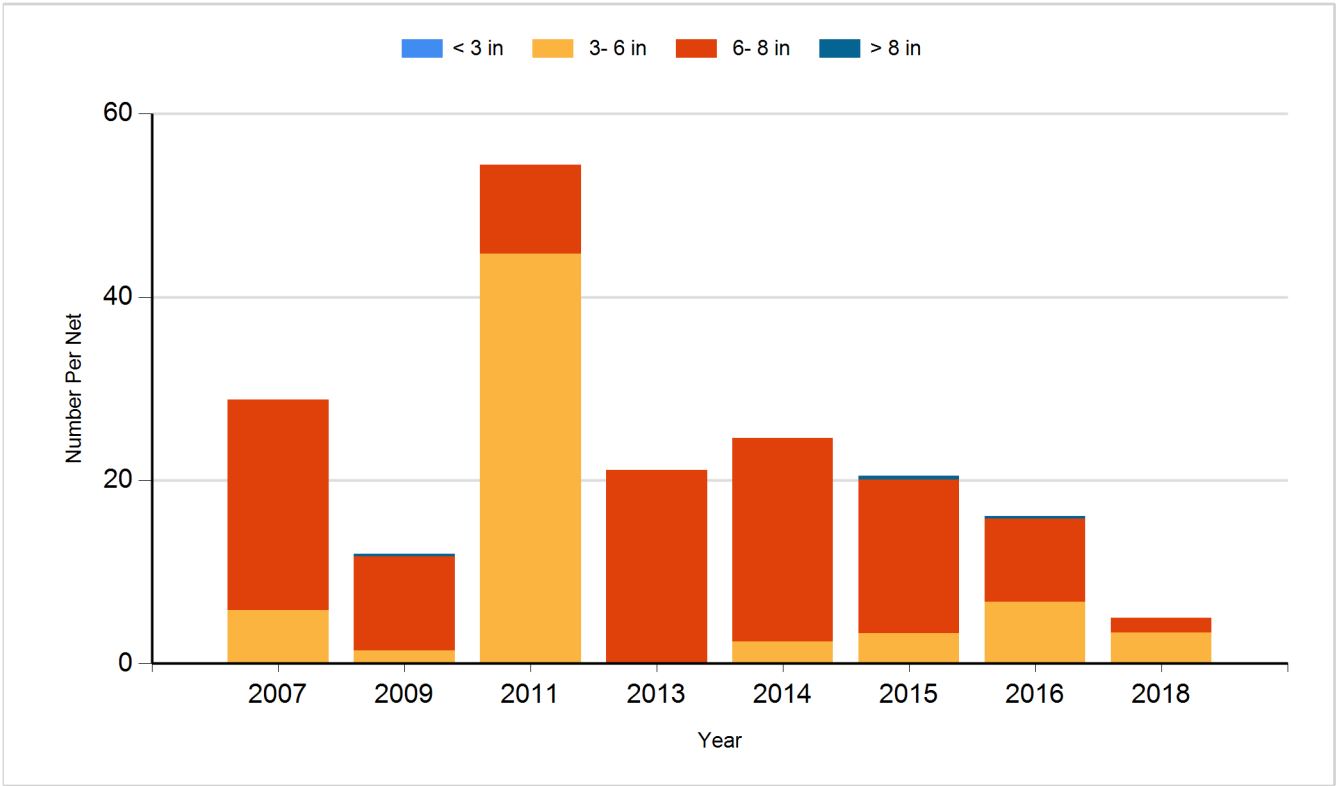
Species: Black Crappie
Gear: frame net (std 3/4 in)



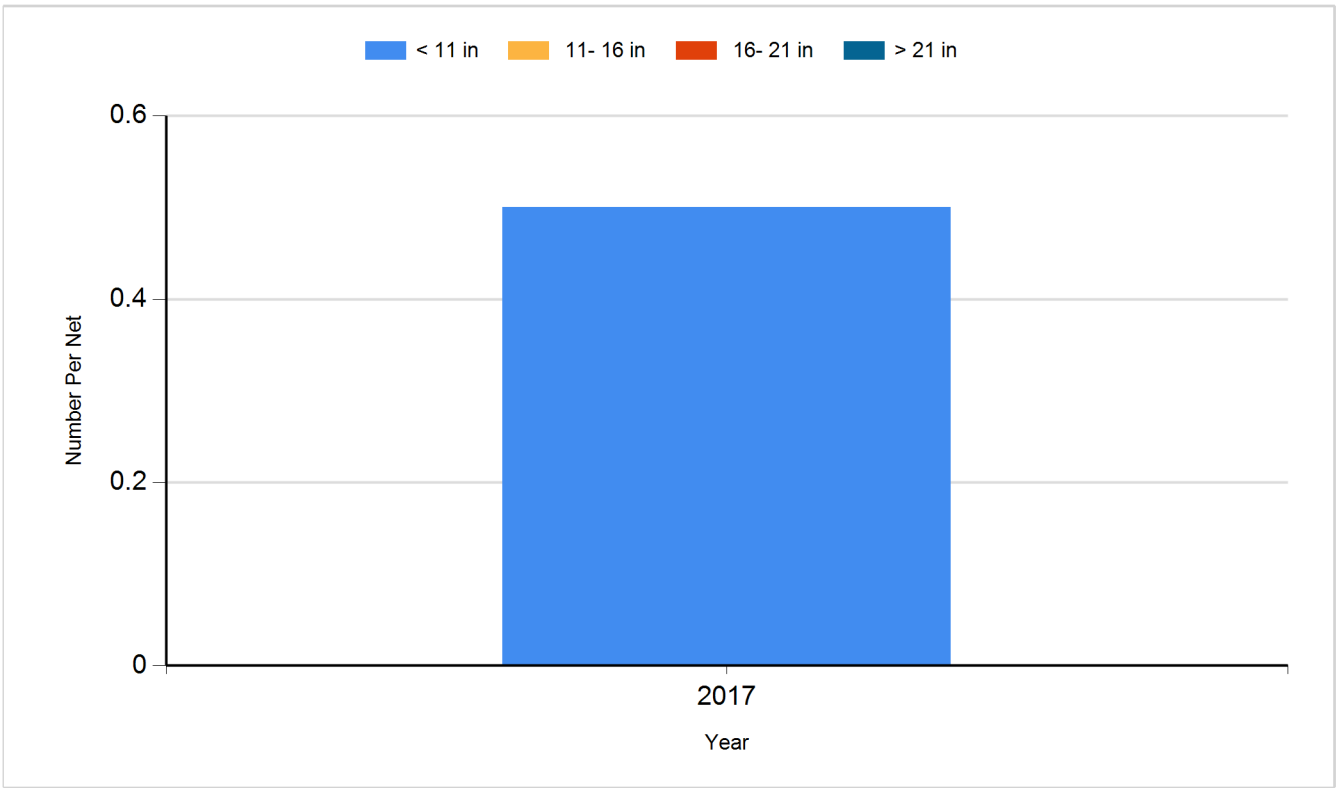
Species: Bluegill
Gear: AFS std frame net



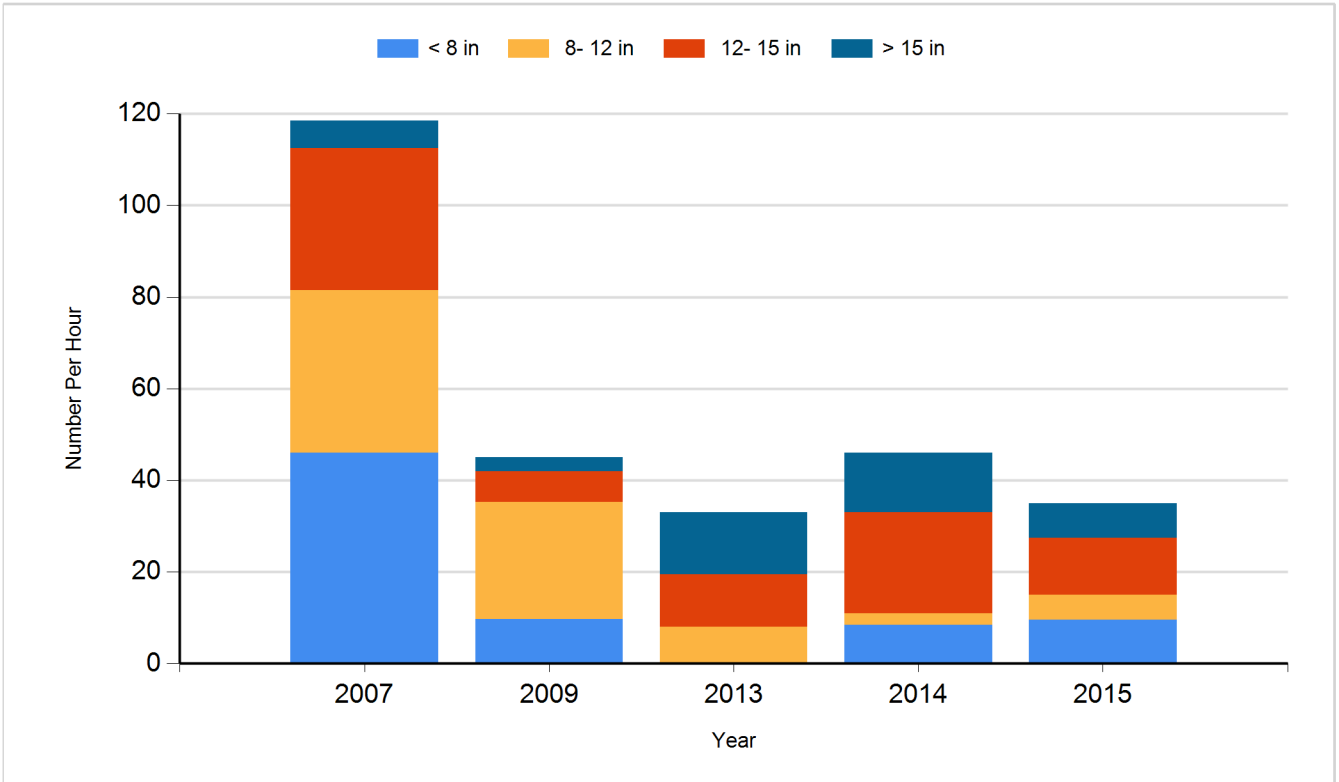
Species: Bluegill
Gear: frame net (std 3/4 in)



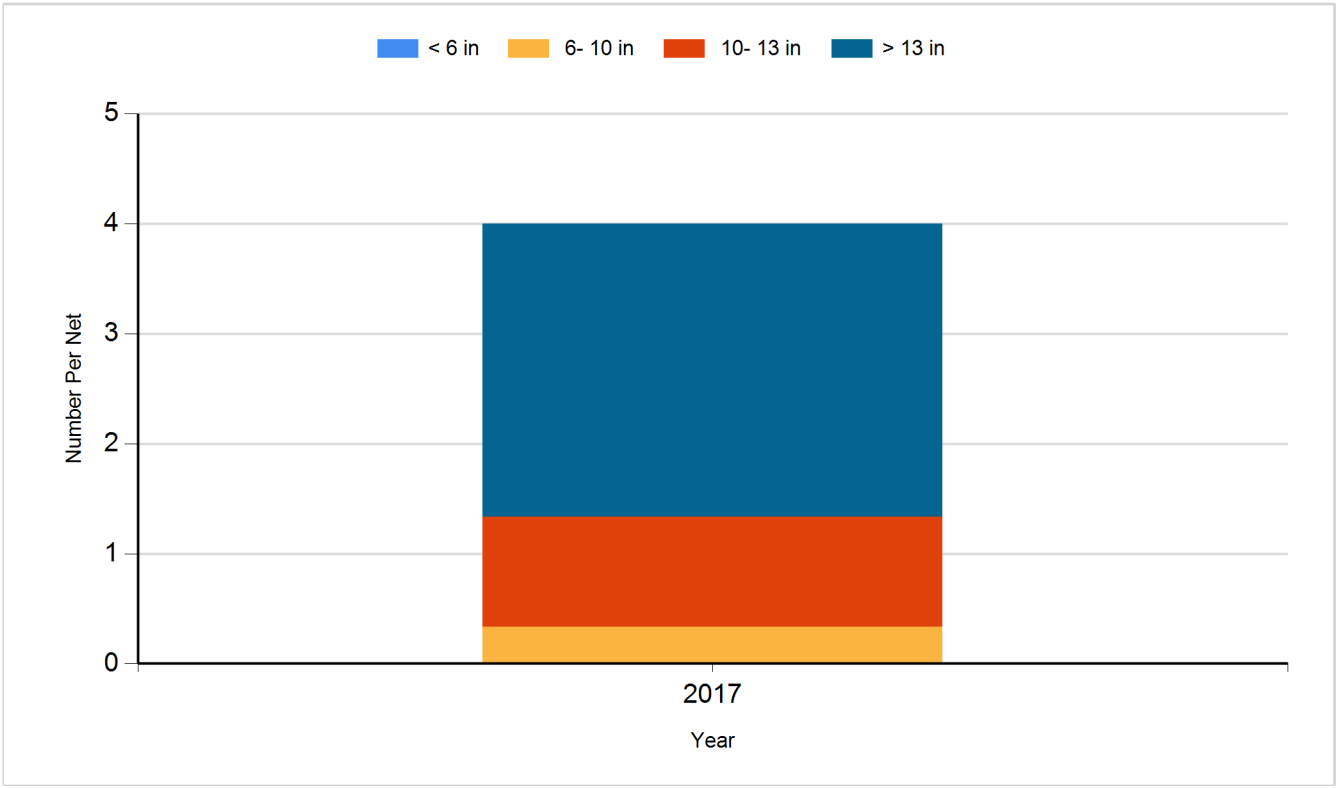
Species: Common Carp
Gear: AFS std gill net



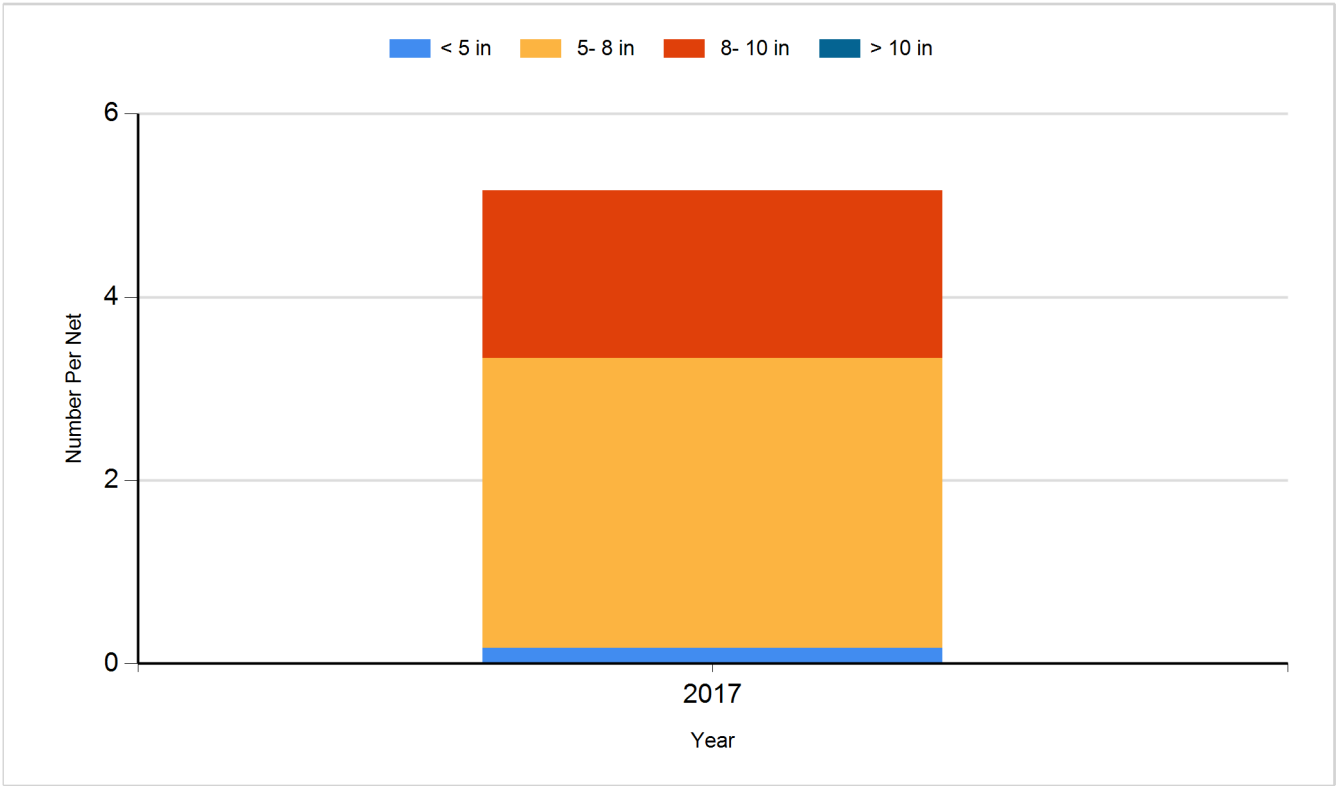
Species: Largemouth Bass
Gear: boat shocker (night)



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