SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Old Wall, Pennington County
MCE-Lake-214-000
2020

Lake Information

Name: Old Wall

County: Pennington

Surface Area: 13 Acres

Surveys and Investigations

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

Gear	Date	Effort
boat shocker (day)	Oct 06, 2020	1200 seconds
frame net (std 3/4 in)	Jun 09, 2020	6 net-nights

__Common Fish Species Present__

Black Bullhead

Largemouth Bass

Black Crappie

Bluegill

Yellow Perch

Golden Shiner

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.

$$PSD = \left(\frac{number\ of\ fish \geq quality\ length}{number\ of\ fish \geq stock\ length}\right) \times 100$$

$$PSD - P = \left(\frac{number\ of\ fish \geq preferred\ length}{number\ of\ fish \geq stock\ length}\right) \times 100$$

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.

$$Wr = \left(\frac{W}{Ws}\right) \times 100$$

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
boat shocker (day)	Largemouth Bass	40	81.0	16.8	7		4		102	2
frame net (std 3/4 in)	Black Bullhead	6420	151.0	73.7	0		0		83	1
	Black Crappie	185	18.5	6.3	56	7	4		101	1
	Bluegill	13	2.2	1.3	100		8		112	4
	Golden Shiner	47	0.0	0.0						
	Largemouth Bass	2	0.0	0.0	0		0			
	Yellow Perch	12	2.0	1.7	67		8		85	5

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	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Avg
boat shocker (day)	Largemouth Bass										81.0	81.00
boat shocker (night)	Largemouth Bass						112.5		22.5			67.50
frame net (std 3/4 in)	Black Bullhead	48.0				33.8	10.5		2.8	1.0	151.0	41.18
	Black Crappie	0.0				0.5	7.0		22.2	4.8	18.5	8.83
	Bluegill	49.8				9.3	114.3		18.2	4.1	2.2	32.98
	Golden Shiner	0.0				0.0	0.0		0.0	0.0	0.0	0.00
	Largemouth Bass	0.3				0.0	0.3		0.0	0.0	0.0	0.10
	Rock Bass	0.0				0.0	0.0		0.0	0.1	0.0	0.02
	Yellow Perch	5.8				18.5	10.1		0.0	0.4	2.0	6.13
std exp gill net	Black Bullhead	54.0										54.00
	Bluegill	1.0										1.00
	Golden Shiner	0.0										0.00
	Largemouth Bass	1.0										1.00
	Yellow Perch	14.0										14.00

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	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
boat shocker (day)	Largemouth Bass	PSD										7
		PSD-P										4
		Wr										102
boat shocker (night)	Largemouth Bass	PSD						56		40		
		PSD-P						27		40		
		Wr						99		100		
frame net (std 3/4 in)	Black Bullhead	PSD	100				100	98		86	100	0
		PSD-P	34				93	96		43	75	0
		Wr	93				96	95		93	96	83
	Black Crappie	PSD					100	5		16	89	56
		PSD-P					0	5		0	0	4
		Wr					104	116		101	103	101
	Bluegill	PSD	66				97	76		34	88	100
		PSD-P	6				3	0		0	0	8
		Wr	91				108	106		103	113	112
	Largemouth Bass	PSD	0					50				0
		PSD-P	0					50				0
		Wr	98					106				
	Yellow Perch	PSD	39				96	95			67	67
		PSD-P	4				32	51			0	8
		Wr	81				93	89			122	85
std exp gill net	Black Bullhead	PSD	24									
		PSD-P	4									
		Wr	105									
	Bluegill	PSD	100									
		PSD-P	0									
		Wr	104									
	Largemouth Bass	PSD	0									
		PSD-P	0									
		Wr	98									
	Yellow Perch	PSD	36									

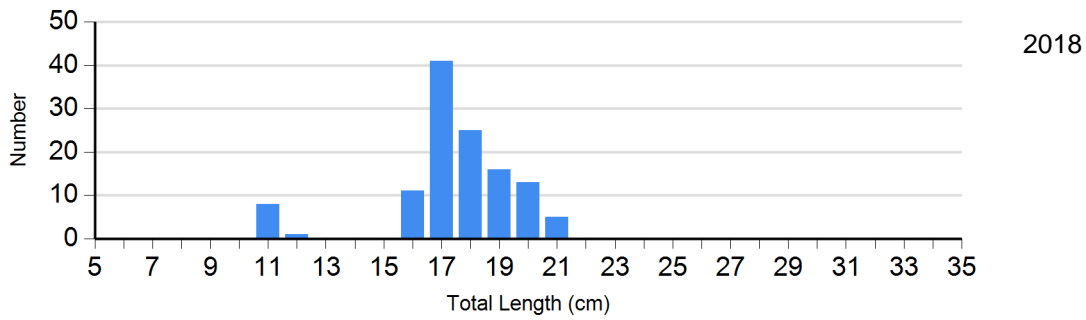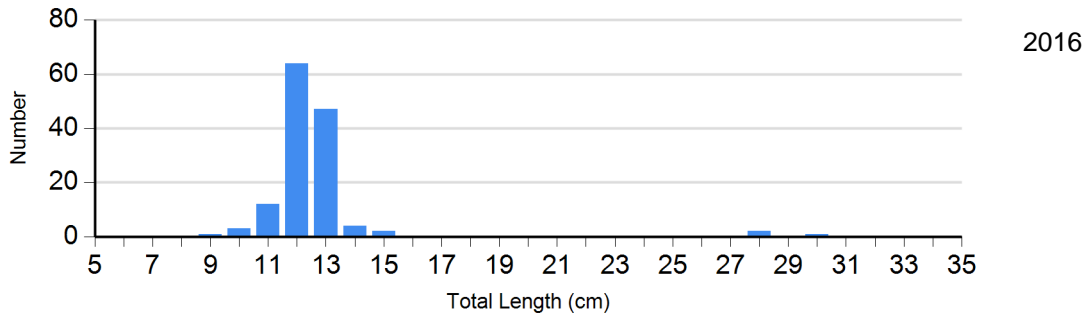| | | | Year | | | | | | | | | |
Gear	Species	Index	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
std exp gill net	Yellow Perch	PSD-P	0									
		Wr	86									

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	2016	53	121 (1.4)	0		2	93 (1.2)	1	91
	2018	93	101 (0.8)	18	92	0		0	
	2019	4	102	34	103 (1.2)	0		0	
	2020	49	107 (1.4)	58	95 (0.8)	4	97	0	
Bluegill Frame Net	2016	218	118 (1.0)	696	104 (0.8)	0		0	
	2018	60	107 (1.5)	31	91 (1.6)	0		0	
	2019	4		29	113 (1.6)	0		0	
	2020	0		12	111 (3.5)	1	122	0	
Largemouth Bass Electro Fishing	2016	33	97 (1.4)	22	102 (2.1)	20	101 (2.3)	0	
	2018	6	103 (3.2)	0		4	96 (1.0)	0	
	2020	25	102 (1.3)	1	99	1	108	0	

Length Frequency Distribution

Length frequency histogram of species sampled by year.
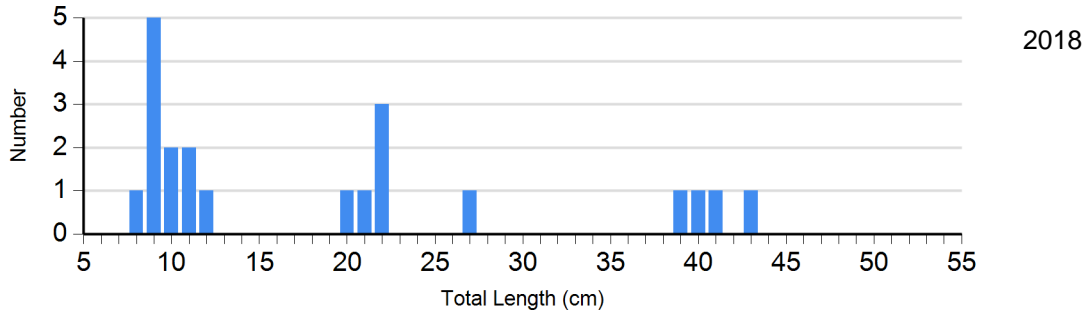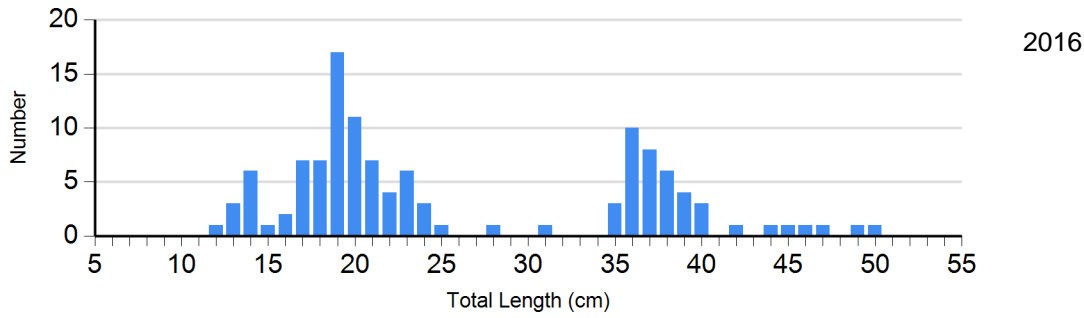
Species: Black Crappie
Gear: frame net (std 3/4 in)

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

2015

2016

2018

2019

2020

Species: Largemouth Bass
Gear: boat shocker (day)

2020

Species: Largemouth Bass
Gear: boat shocker (night)

2016

2018

Historic Fish Sizes and Relative Abundance
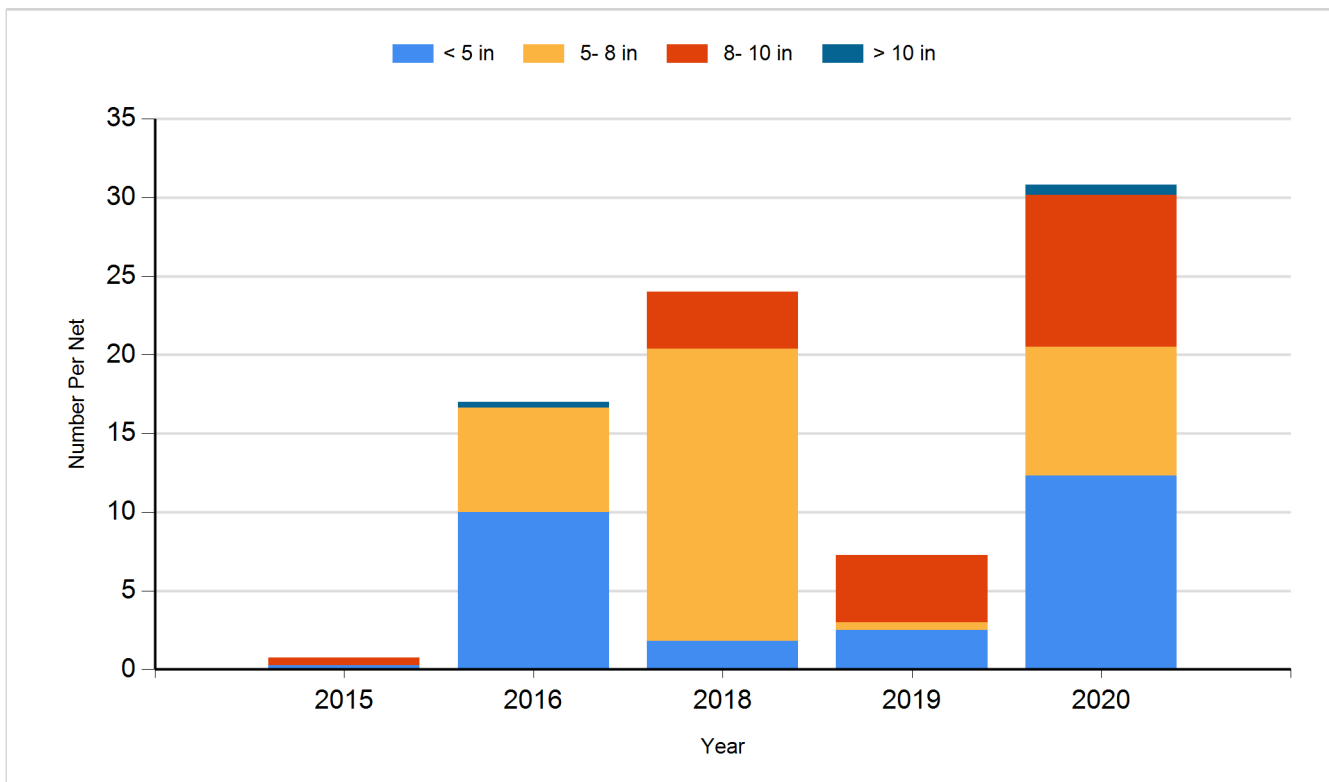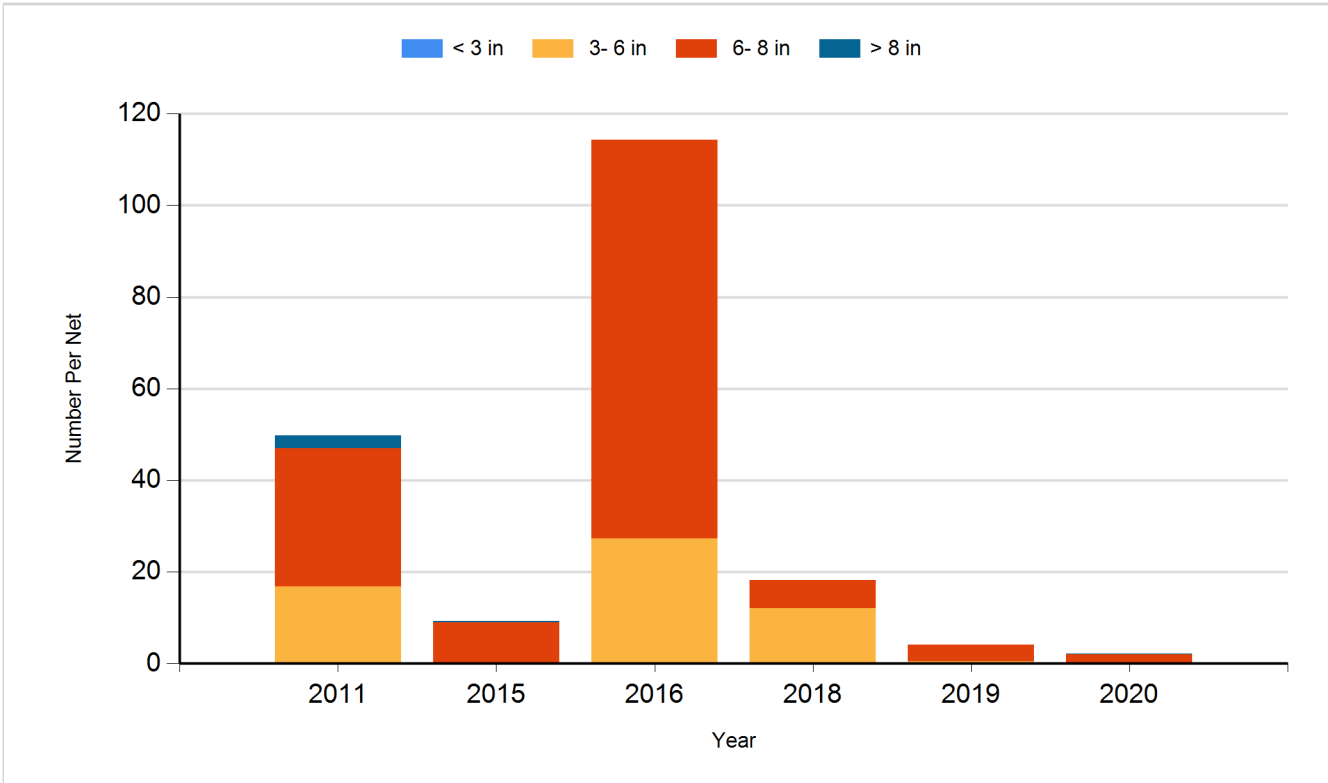
Size distribution per net by color for species sampled by year.

Species: Black Bullhead
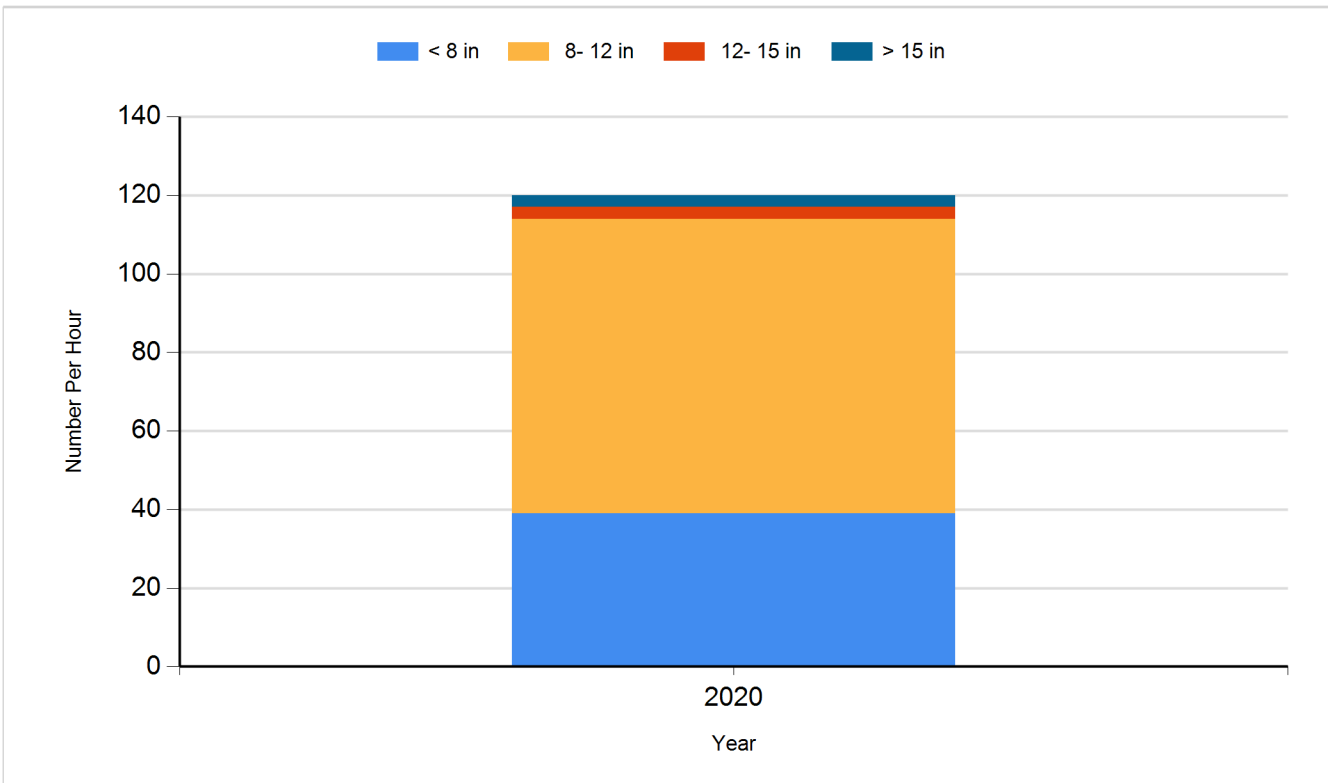Gear: std exp gill net

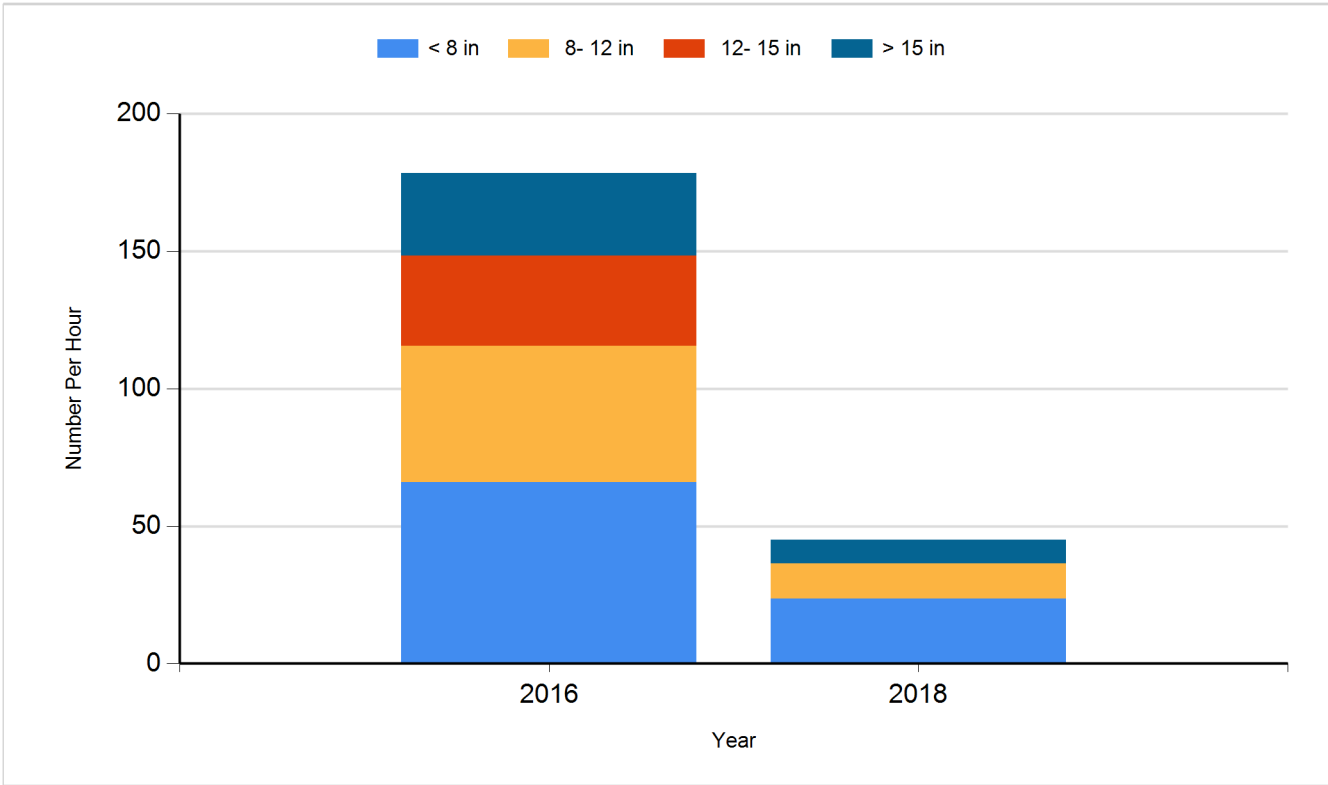Species: Black Crappie
Gear: frame net (std 3/4 in)
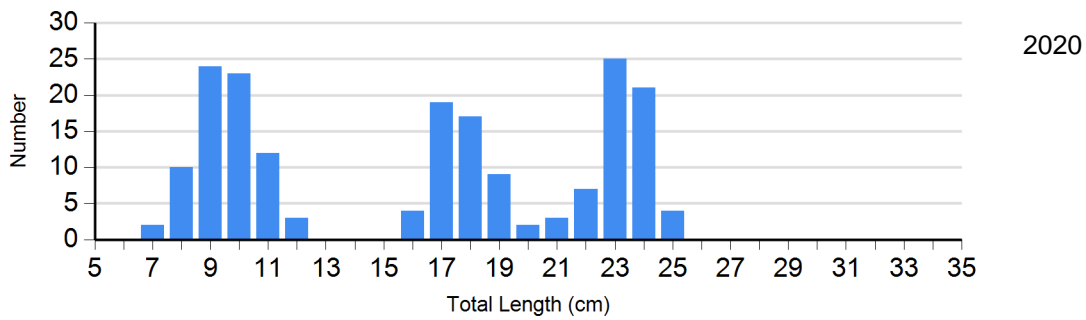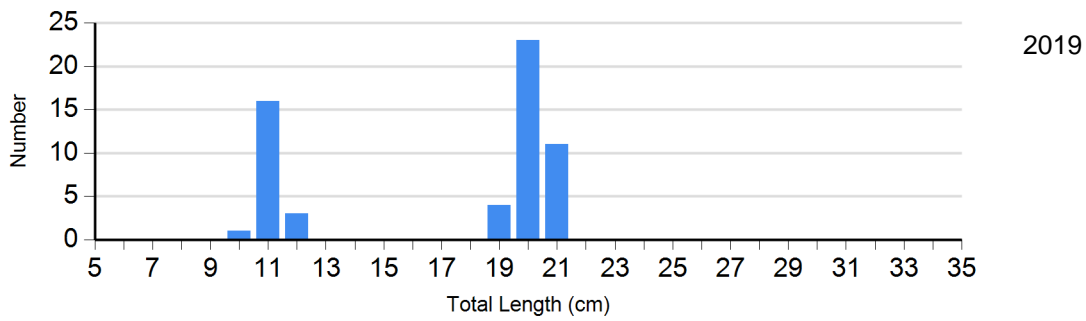
Species: Bluegill
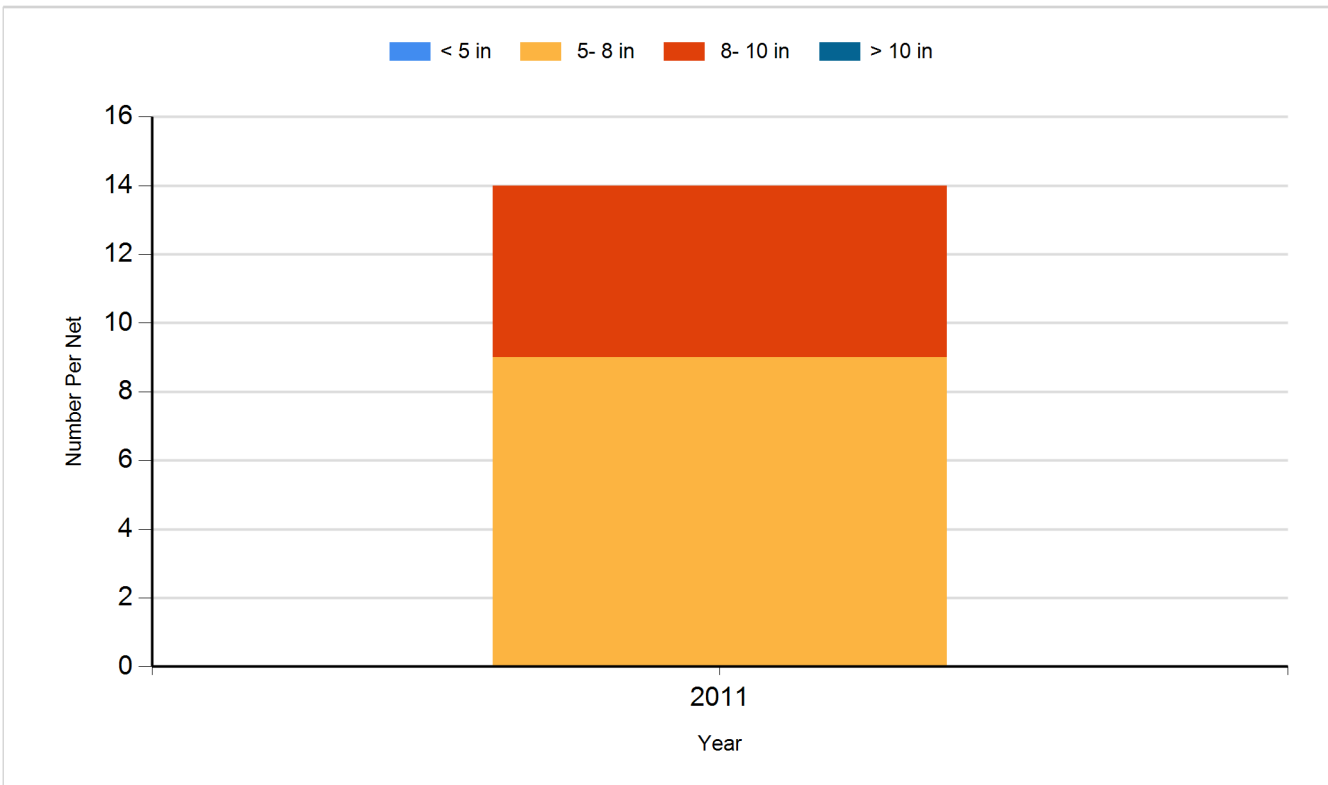Gear: frame net (std 3/4 in)
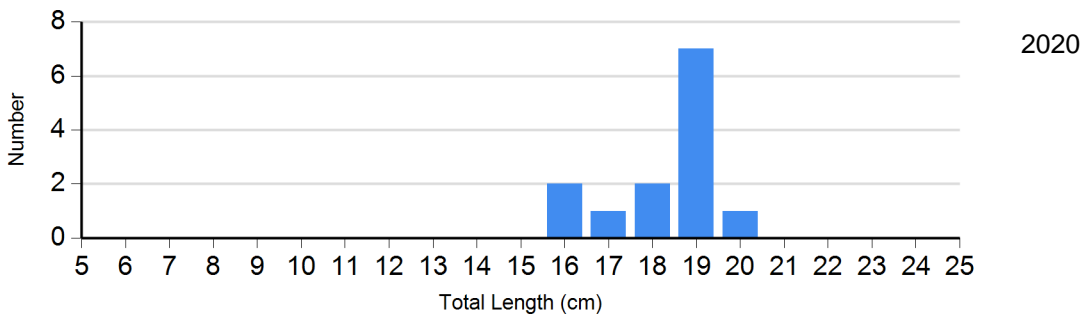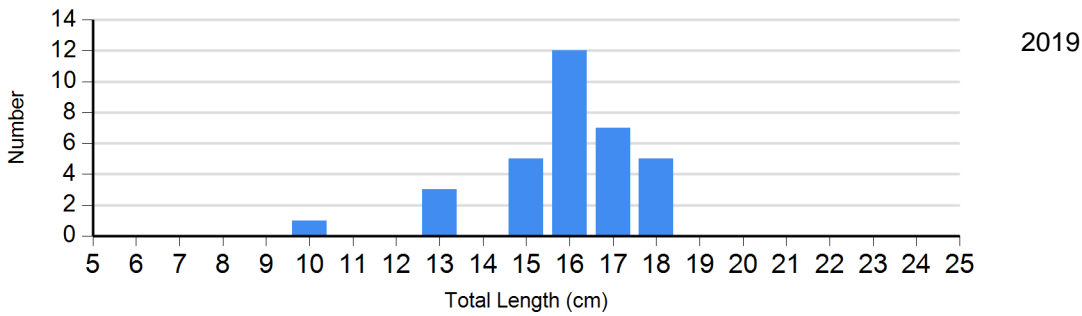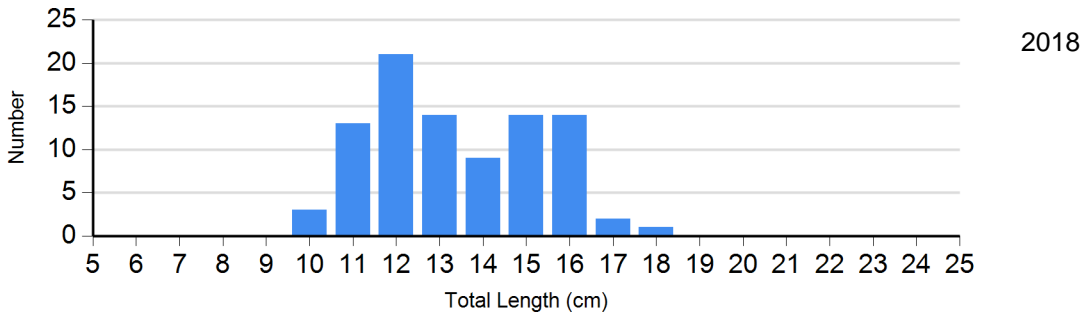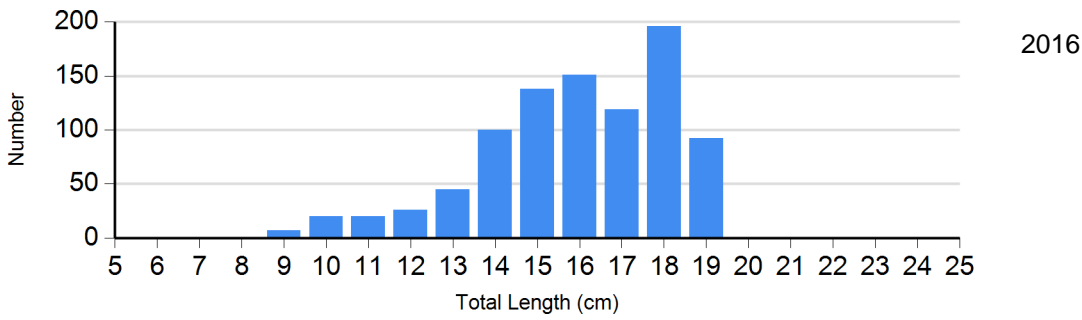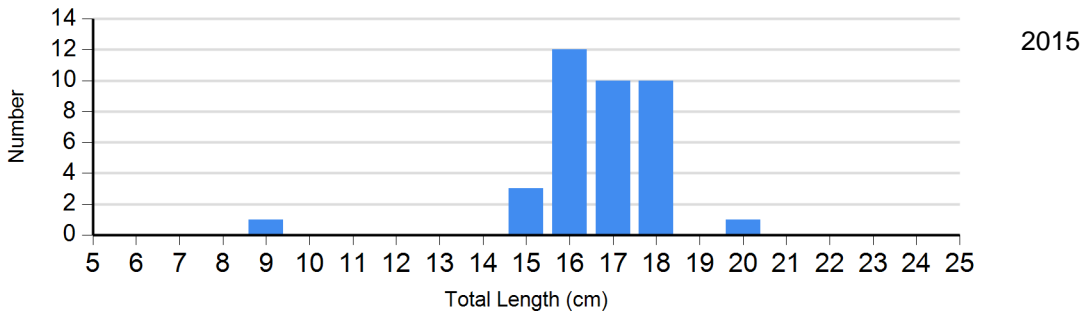
Species: Largemouth Bass
Gear: boat shocker (day)

Species: Largemouth Bass
Gear: boat shocker (night)

Species: Yellow Perch
Gear: std exp gill net

Fish Stocking

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

Year	Species	Size	Number
2011	Largemouth Bass	Fingerling	5,000
2019	Yellow Perch	Adult	300