SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Roosevelt, Tripp County
PON-Lake-203-000
2020

Lake Information

Name: Roosevelt
County: Tripp
Legal Description: T97-R74-S20
Surface Area: 86 Acres
Maximum Depth: 18 Feet
Mean Depth: 6 Feet

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jun 22, 2020	1 net-nights
AFS std gill net	Jun 23, 2020	1 net-nights
boat shocker (night)	Oct 06, 2020	3600 seconds
boat shocker (night)	Sep 28, 2020	2400 seconds
boat shocker (night)	Sep 30, 2020	1200 seconds
frame net (std 3/4 in)	Jun 22, 2020	5 net-nights
frame net (std 3/4 in)	Jun 23, 2020	5 net-nights

Common Fish Species Present

Largemouth Bass

Bluegill

Black Crappie

Walleye

Yellow Perch

Northern Pike

Black Bullhead

Green Sunfish

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.

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

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

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
AFS std gill net	Black Bullhead	2	1.0	3.1	50		0		124	10
	Black Crappie	8	2.0	6.2	25		0		113	7
	Bluegill	4	2.0	0.0	50		0		103	5
	Golden Shiner	12	0.0	0.0						
	Northern Pike	13	6.5	10.8	62		0		90	1
	Yellow Perch	34	17.0	9.2	79	11	12		91	1
boat shocker (night)	Largemouth Bass	217	94.5	20.9	41	5	20	4	115	1
frame net (std 3/4 in)	Black Bullhead	6	0.6	0.4	33		17		97	4
	Black Crappie	193	18.7	4.6	79	4	4	2	95	1
	Bluegill	553	55.3	8.6	97	1	7	2	95	1
	Green Sunfish	10	1.0	0.4	90		80		124	5
	Largemouth Bass	1	0.1	0.1	100		100		107	
	Northern Pike	27	2.5	0.7	68	15	16		85	4
	Yellow Perch	25	2.5	1.2	64	15	24	14	89	4

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
AFS std frame net	Black Crappie							2.6				2.60
	Bluegill							5.3				5.30
	Northern Pike							0.5				0.50
	Yellow Perch							2.1				2.10
AFS std gill net	Black Bullhead							0.0			1.0	0.50
	Black Crappie							0.5			2.0	1.25
	Bluegill							0.0			2.0	1.00
	Golden Shiner							0.0			0.0	0.00
	Largemouth Bass							0.5			0.0	0.25
	Northern Pike							3.0			6.5	4.75
	Yellow Perch							4.0			17.0	10.50
boat shocker (night)	Largemouth Bass	99.0		65.0			82.5	76.0	40.0	103.5	94.5	80.07
frame net (std 3/4 in)	Black Bullhead	1.7		1.1							0.6	1.13
	Black Crappie	6.1		10.0							18.7	11.60
	Bluegill	10.0		10.0							55.3	25.10
	Green Sunfish	0.8		0.0							1.0	0.60
	Largemouth Bass	0.1		0.7							0.1	0.30
	Northern Pike	0.1		0.7							2.5	1.10
	Walleye	0.1		0.1							0.0	0.07
	Yellow Perch	1.0		1.9							2.5	1.80
std exp gill net	Black Bullhead	2.0		0.5								1.25
	Black Crappie	5.0		1.0								3.00
	Bluegill	3.0		3.5								3.25
	Golden Shiner	0.0		0.0								0.00
	Largemouth Bass	0.0		0.0								0.00
	Northern Pike	4.5		3.5								4.00
	Walleye	1.5		0.5								1.00
	Yellow Perch	15.5		0.0								7.75

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	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
AFS std frame net	Black Crappie	PSD							92			
		PSD-P							23			
		Wr							106			
	Bluegill	PSD							36			
		PSD-P							23			
		Wr							111			
	Northern Pike	PSD							60			
		PSD-P							20			
		Wr							85			
	Yellow Perch	PSD							81			
		PSD-P							38			
		Wr							93			
AFS std gill net	Black Bullhead	PSD										50
		PSD-P										0
		Wr										124
	Black Crappie	PSD							100			25
		PSD-P							0			0
		Wr							120			113
	Bluegill	PSD										50
		PSD-P										0
		Wr										103
	Largemouth Bass	PSD							100			
		PSD-P							100			
		Wr							86			
	Northern Pike	PSD							100			62
		PSD-P							50			0
		Wr							91			90
	Yellow Perch	PSD							25			79
		PSD-P							0			12
		Wr							101			91
boat shocker (night)	Largemouth Bass	PSD	63		89			33	53	54	66	41
		PSD-P	33		57			33	33	18	26	20

			Year									
Gear	Species	Index	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
boat shocker (night)	Largemouth Bass	Wr	111		119			111	112	110	112	115
	Walleye	PSD	100									
		PSD-P	0									
		Wr	111									
frame net (std 3/4 in)	Black Bullhead	PSD	65		100							33
		PSD-P	53		91							17
		Wr	94		98							97
	Black Crappie	PSD	59		24							79
		PSD-P	3		0							4
		Wr	105		112							95
	Bluegill	PSD	71		53							97
		PSD-P	11		3							7
		Wr	104		116							95
	Green Sunfish	PSD	100									90
		PSD-P	38									80
		Wr	132									124
	Largemouth Bass	PSD	100		100							100
		PSD-P	100		86							100
		Wr	102		104							107
	Northern Pike	PSD	100		86							68
		PSD-P	0		57							16
		Wr	92		88							85
	Walleye	PSD	100		100							
		PSD-P	100		100							
		Wr	83		90							
	Yellow Perch	PSD	100		84							64
		PSD-P	100		42							24
		Wr	87		93							89
std exp gill net	Black Bullhead	PSD	25		100							
		PSD-P	25		100							
		Wr	95		109							
	Black Crappie	PSD	0		100							
		PSD-P	0		0							
		Wr	104		104							
	Bluegill	PSD	50		100							
		PSD-P	0		43							

			Year									
Gear	Species	Index	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
std exp gill net	Bluegill	Wr	102		102							
	Largemouth Bass	PSD			0							
		PSD-P			0							
	Northern Pike	PSD	89		100							
		PSD-P	22		57							
		Wr	93		84							
	Walleye	PSD	100		100							
		PSD-P	33		0							
		Wr	77		90							
	Yellow Perch	PSD	13									
		PSD-P	0									
		Wr	98									

Back-Calculated Lengths

Mean species back-calculated total length (mm) at age, standard error (SE), and sample size (N).

Species: Black Crappie

Year Class	Age	N	Mean back-calculated length (SE) at age									
			1	2	3	4	5	6	7	8	9	10
2019	1	1	107									
2018	2	15	77 (4)	123 (3.7)								
2017	3	7	76 (4.6)	124 (3.2)	172 (2.8)							
2016	4	18	80 (2.4)	131 (4.2)	175 (4.1)	197 (4.7)						
2015	5	8	80 (1.5)	126 (5.4)	177 (7.5)	208 (7.3)	228 (6.7)					
2014	6	1	83	122	172	201	222	237				
Weighted Mean		50	79	127	175	200	227	237				

Year Class	Age	N	11	12	13	14	15	16	17	18	19	20
2019	1	1										
2018	2	15										
2017	3	7										
2016	4	18										
2015	5	8										
2014	6	1										
Weighted Mean		50										

Species: Bluegill

Year Class	Age	N	Mean back-calculated length (SE) at age									
			1	2	3	4	5	6	7	8	9	10
2018	2	9	88 (5.5)	126 (5.3)								
2017	3	24	80 (2.9)	128 (4)	161 (2.7)							
2016	4	7	64 (1.8)	109 (2.9)	162 (4.3)	185 (4.1)						
Weighted Mean		40	79	124	161	185						

Year Class	Age	N	11	12	13	14	15	16	17	18	19	20
2018	2	9										
2017	3	24										
2016	4	7										
Weighted Mean		40										

Species: Largemouth Bass

Year Class	Age	N	Mean back-calculated length (SE) at age									
			1	2	3	4	5	6	7	8	9	10
2019	1	1	86									
2018	2	15	82 (2.8)	145 (5.6)								
2017	3	20	80 (3.2)	149 (2.7)	204 (2.6)							
2016	4	25	79 (2.3)	144 (3.4)	196 (4.5)	235 (4.7)						
2015	5	25	84 (3.7)	141 (5.3)	204 (6.2)	259 (7.2)	302 (7.3)					
2014	6	13	86 (4.7)	145 (9)	200 (11.8)	261 (12.6)	308 (14.3)	345 (12.1)				
2013	7	8	98 (7.9)	162 (9.1)	225 (12.5)	291 (12)	342 (12)	384 (13.1)	421 (13.8)			
2012	8	6	94 (4.1)	151 (9)	216 (15.3)	281 (20.5)	326 (18.9)	364 (18.6)	396 (18.9)	422 (18.3)		
Weighted Mean		113	84	146	204	257	312	361	410	422		

Year Class	Age	N	11	12	13	14	15	16	17	18	19	20
2019	1	1										
2018	2	15										
2017	3	20										
2016	4	25										
2015	5	25										
2014	6	13										
2013	7	8										
2012	8	6										
Weighted Mean		113										

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+
2020	193	127 (2)	139 (36)	199 (18)	218 (111)	232 (27)	255 (2)				
2017	97	101 (71)		211 (18)	206 (2)	297 (3)	303 (3)				
2013	102		146 (56)	126 (2)	199 (32)	205 (13)					
2011	73	85 (1)	135 (34)	191 (2)	214 (34)	253 (2)					

Species: Bluegill

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2020	553		159 (80)	175 (409)	195 (65)						
2017	42		135 (27)	195 (6)	216 (3)	253 (5)	255 (2)				
2013	100		101 (14)	137 (40)	151 (10)	183 (13)		185 (8)	187 (9)	196 (5)	194 (3)
2011	100			120 (3)	156 (65)	190 (24)	201 (7)	211 (1)			222 (1)

Species: Largemouth Bass

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2020	214	141 (1)	177 (28)	231 (49)	262 (50)	331 (46)	376 (21)	448 (15)	436 (11)		
2018	90	177 (8)	224 (29)	279 (14)	328 (26)	421 (6)	455 (3)	443 (3)	436 (1)	479 (1)	
2013	64		240 (1)	299 (3)	327 (11)	374 (11)	388 (14)	404 (8)	434 (4)	440 (7)	472 (6)
2011	109	172 (9)	223 (28)	277 (9)	322 (16)	352 (9)	383 (15)	409 (13)	411 (3)	466 (2)	472 (5)

Species: Yellow Perch

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2020	34	148 (2)	175 (4)	221 (7)	239 (17)	242 (4)					
2011	31		145 (27)			235 (3)	247 (1)				

Fish Condition

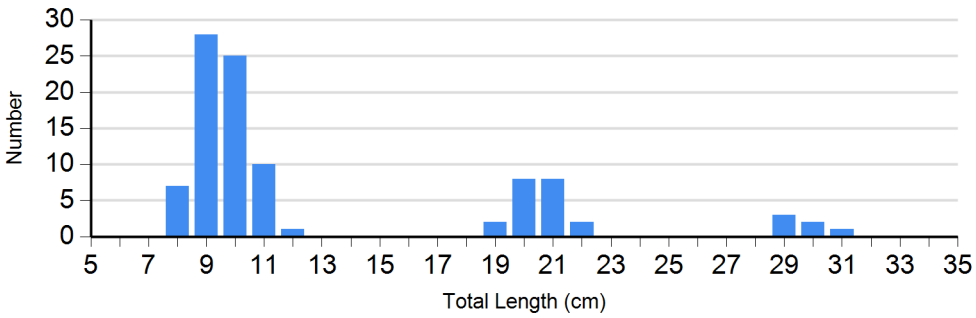
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Black Bullhead Gill Net	2020	1	132	1	116	0		0	
Black Crappie Frame Net	2017	2	105 (0.4)	18	109 (3.0)	3	96 (4.9)	3	98 (4.6)
	2020	40	97 (1.7)	140	95 (0.8)	7	91 (2.4)	0	
Bluegill Frame Net	2017	34	106 (2.4)	7	112 (2.9)	8	127 (3.0)	4	118 (6.2)
	2020	16	96 (3.0)	499	95 (0.6)	38	95 (1.5)	0	
Largemouth Bass Electro Fishing	2016	110	112 (0.7)	1	124	53	109 (1.3)	1	79
	2017	36	116 (1.5)	15	109 (2.2)	25	108 (2.2)	0	
	2018	37	111 (2.1)	29	108 (1.3)	14	108 (2.4)	0	
	2019	71	115 (4.0)	82	108 (1.3)	53	112 (1.5)	1	110
	2020	112	115 (1.5)	40	113 (1.7)	37	116 (1.4)	0	
Northern Pike Gill Net	2017	0		3	97 (7.5)	3	85 (2.9)	0	
	2020	5	91 (1.4)	8	89 (1.5)	0		0	
Yellow Perch Gill Net	2017	6	101 (2.4)	2	102 (2.4)	0		0	
	2020	7	100 (1.6)	23	88 (1.0)	4	88 (2.2)	0	

Length Frequency Distribution

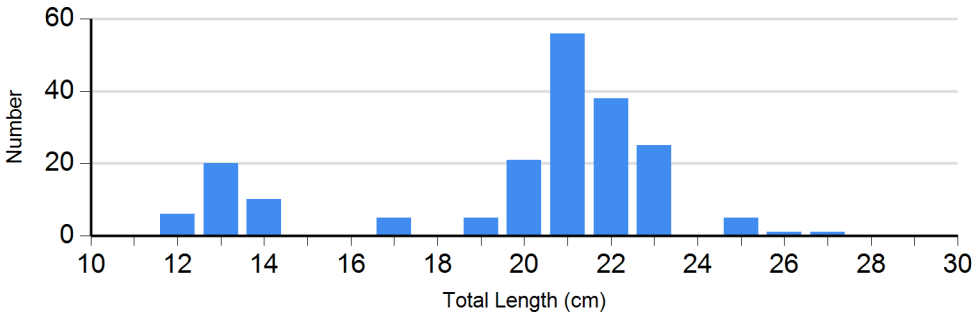
Length frequency histogram of species sampled by year.

Species: Black Crappie
Gear: AFS std frame net



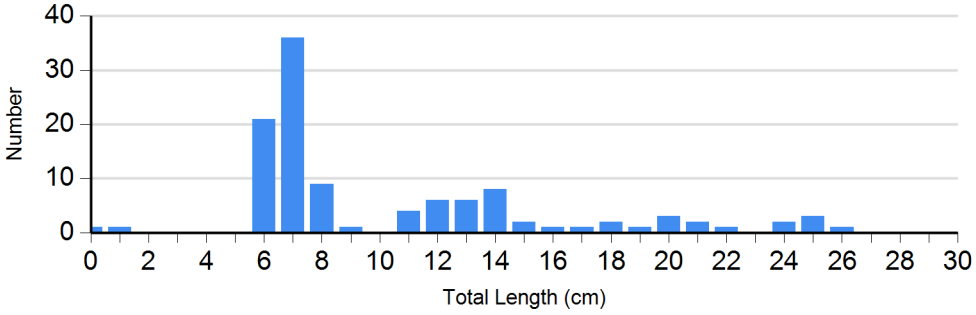
2017

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



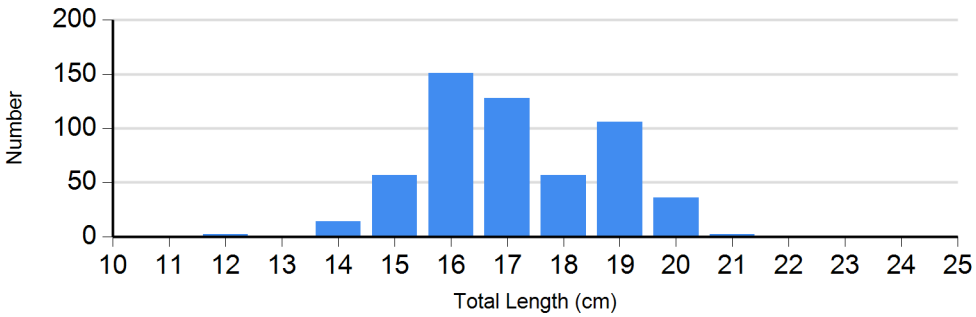
2020

Species: Bluegill
Gear: AFS std frame net



2017

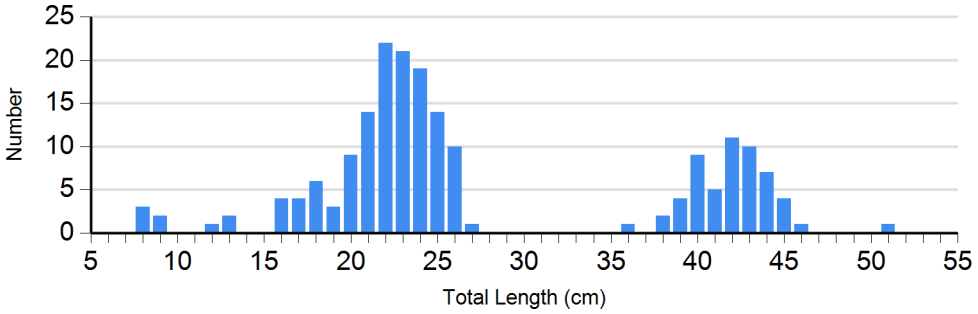
Species: Bluegill
Gear: frame net (std 3/4 in)



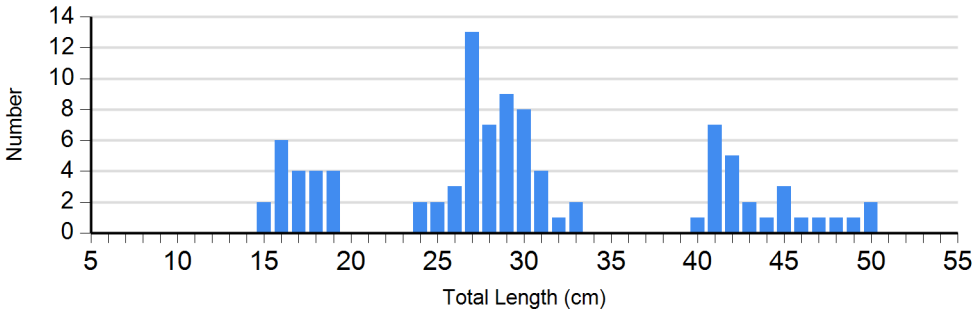
2020

Species: Largemouth Bass
Gear: boat shocker (night)

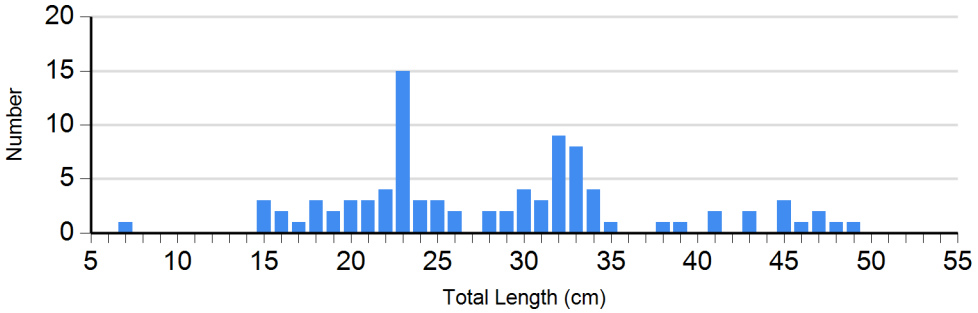
2016



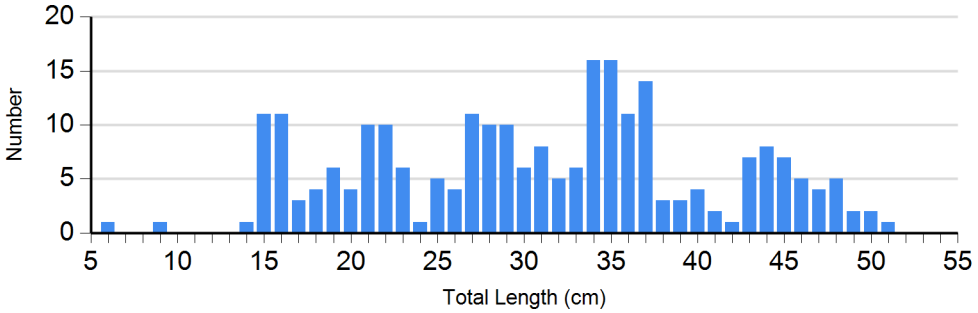
2017



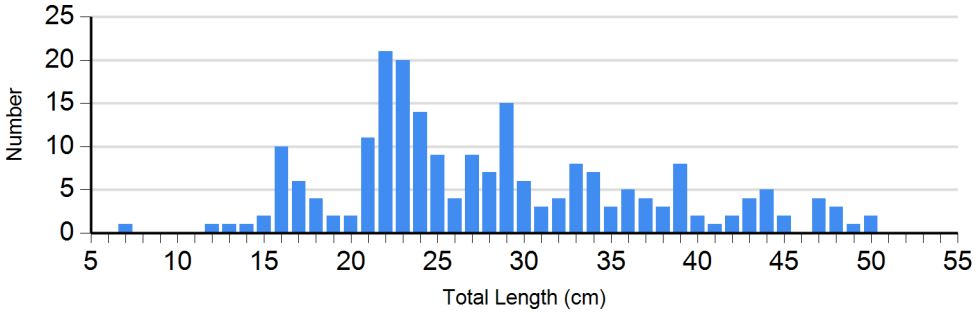
2018



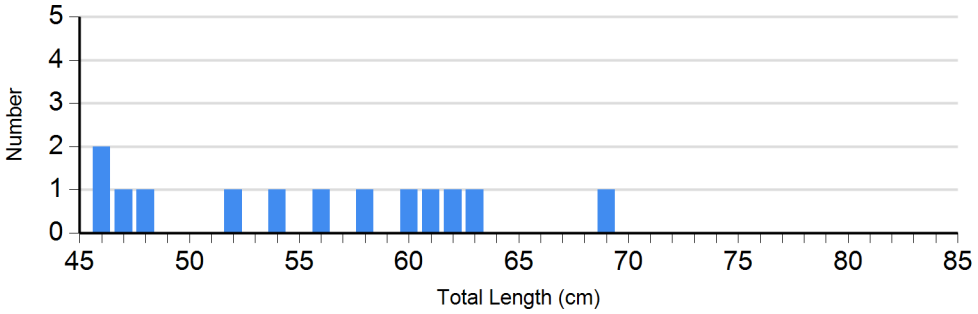
2019



2020

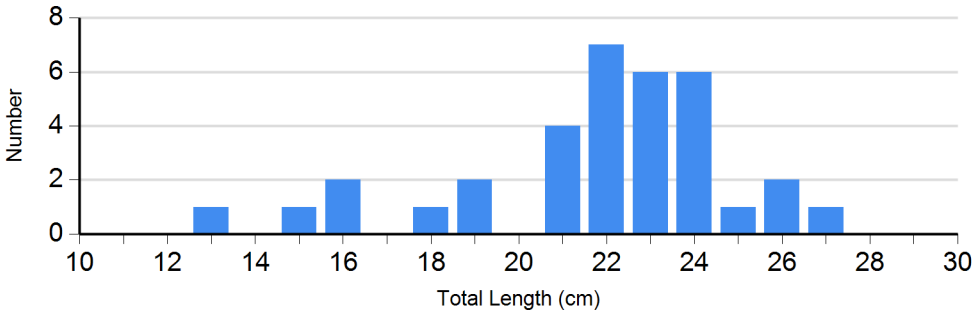


Species: Northern Pike
Gear: AFS std gill net



2020

Species: Yellow Perch
Gear: AFS std gill net

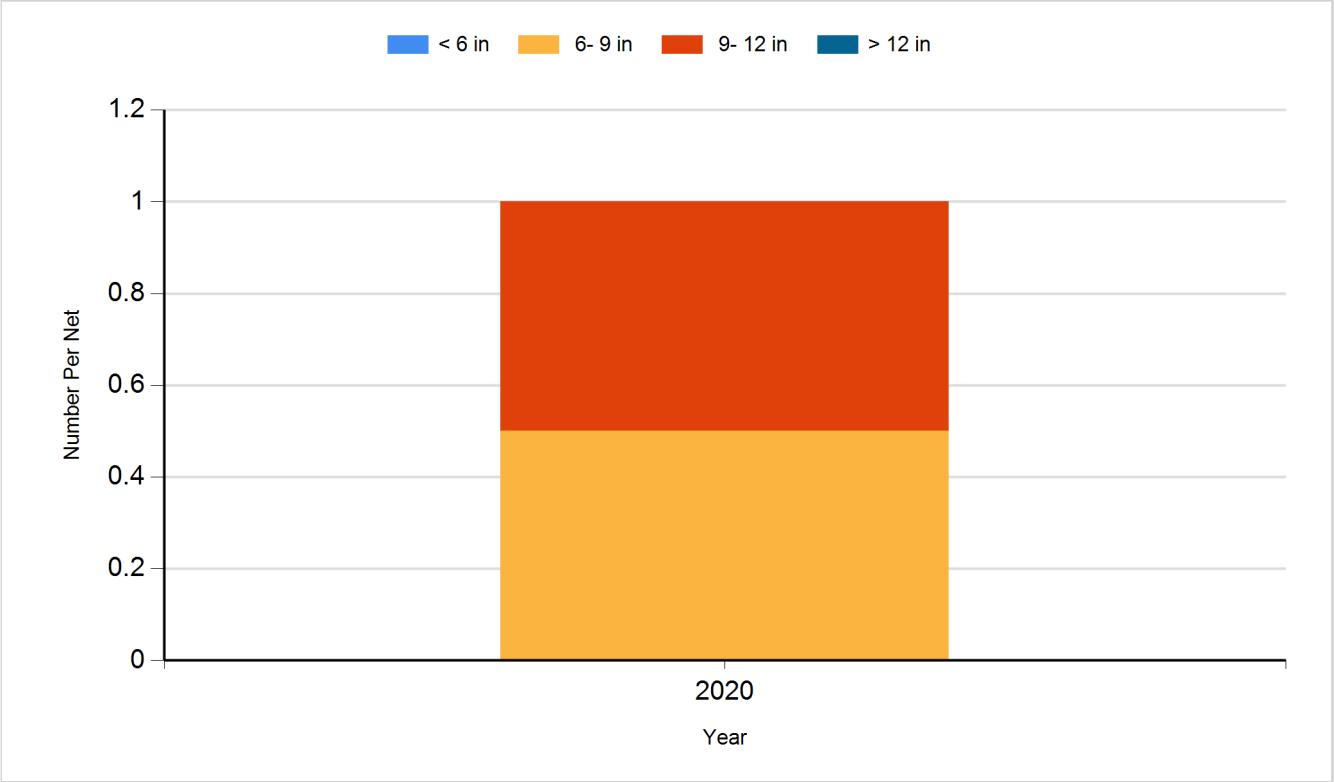


2020

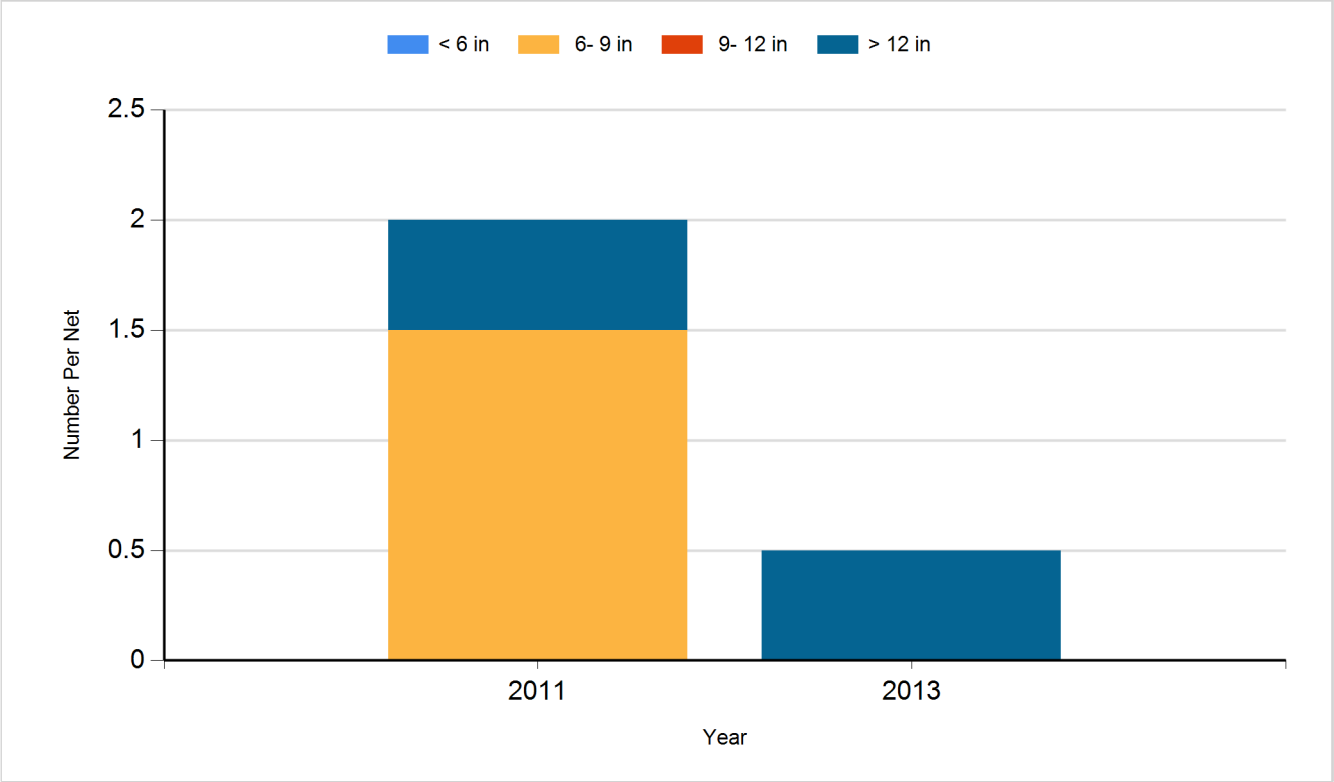
Historic Fish Sizes and Relative Abundance

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

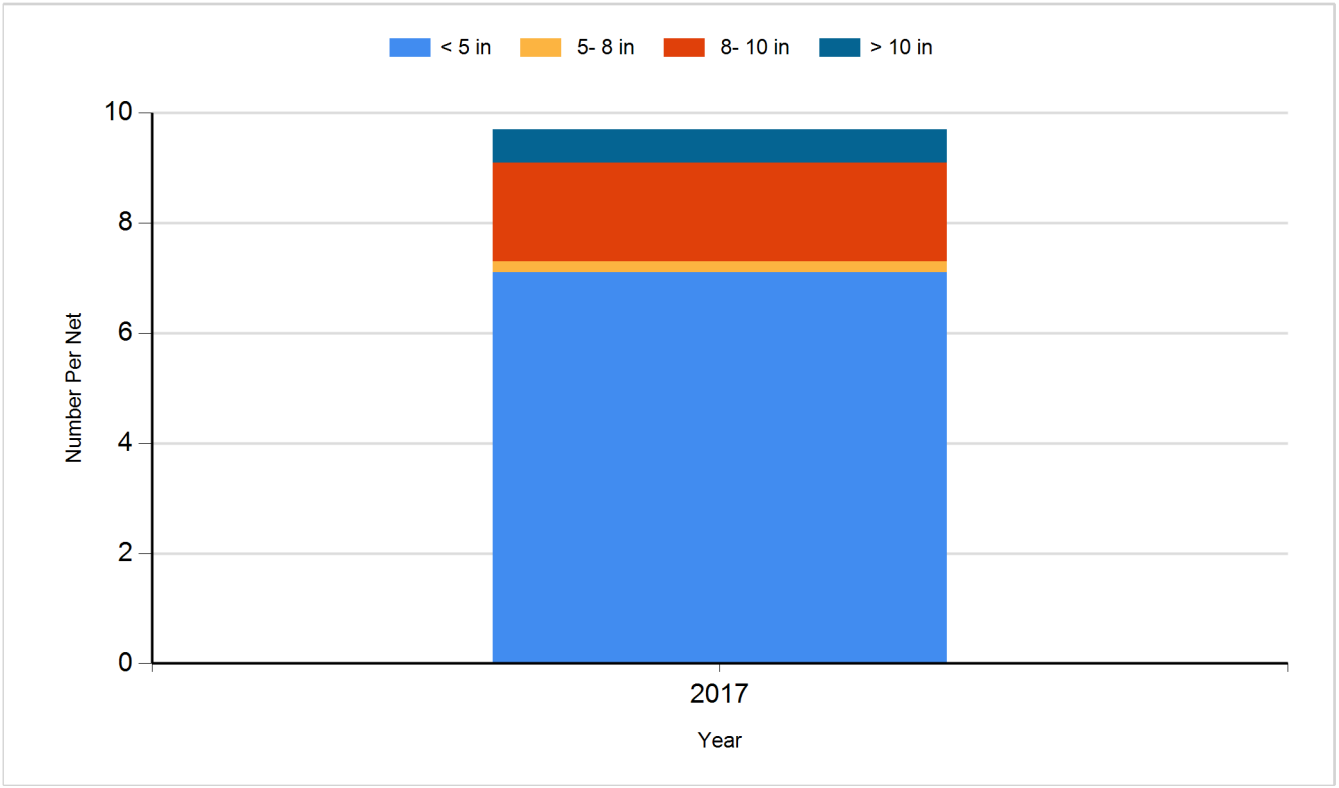
Species: Black Bullhead
Gear: AFS std gill net



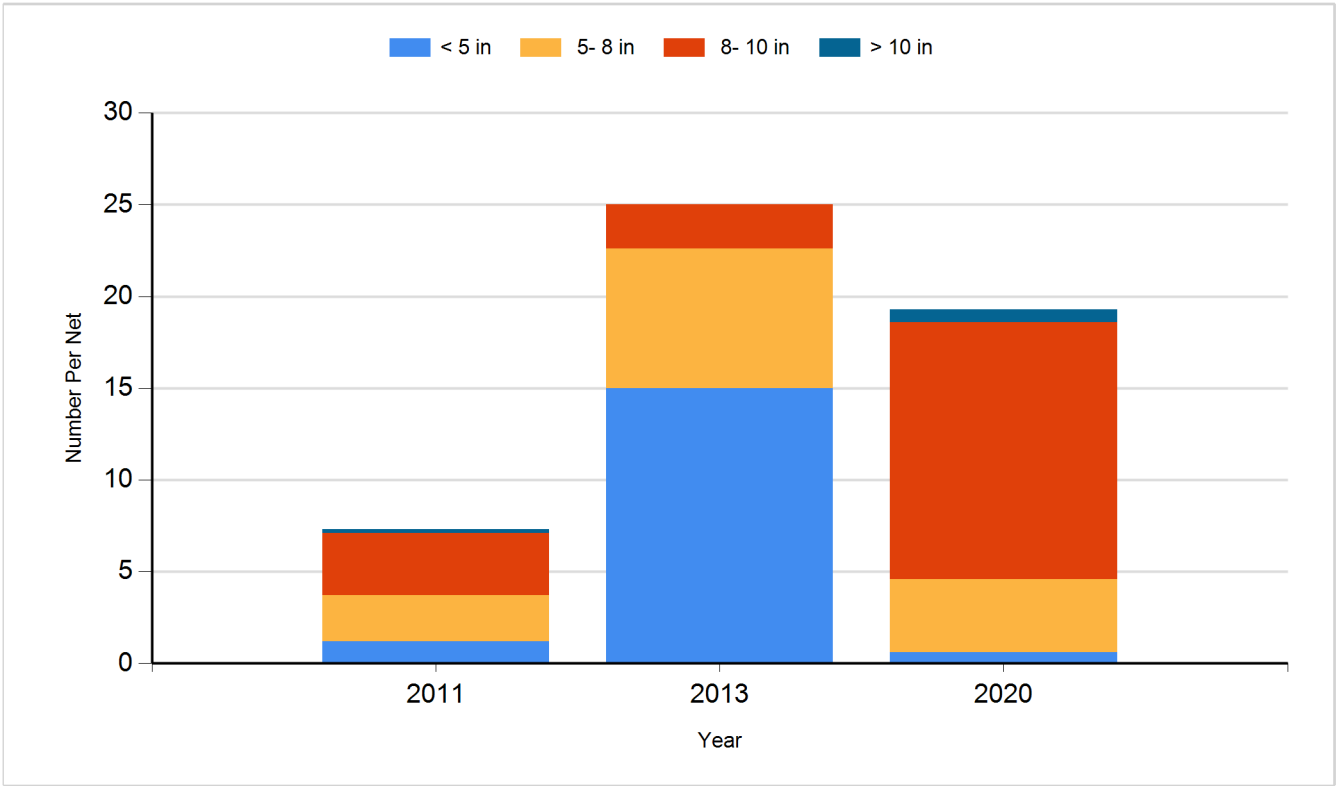
Species: Black Bullhead
Gear: std exp gill net



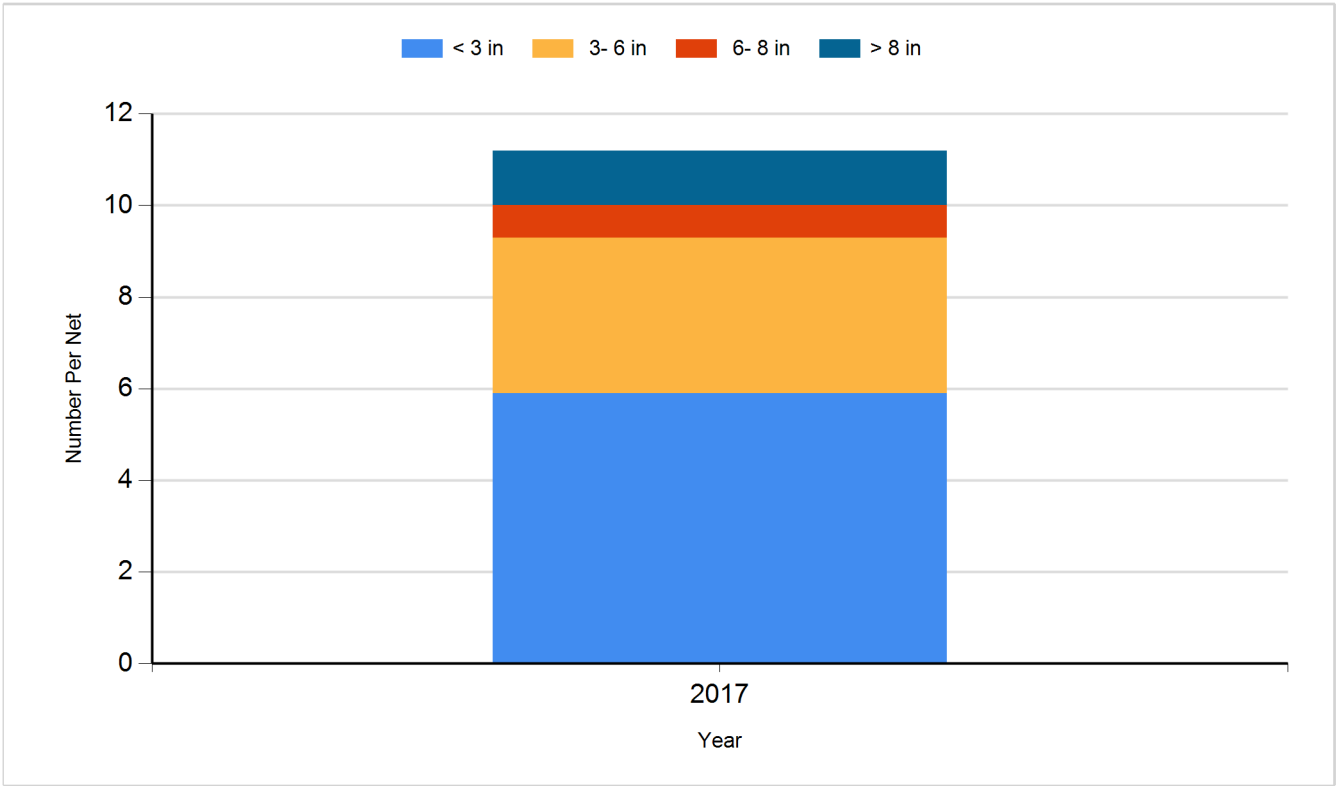
Species: Black Crappie
Gear: AFS std frame net



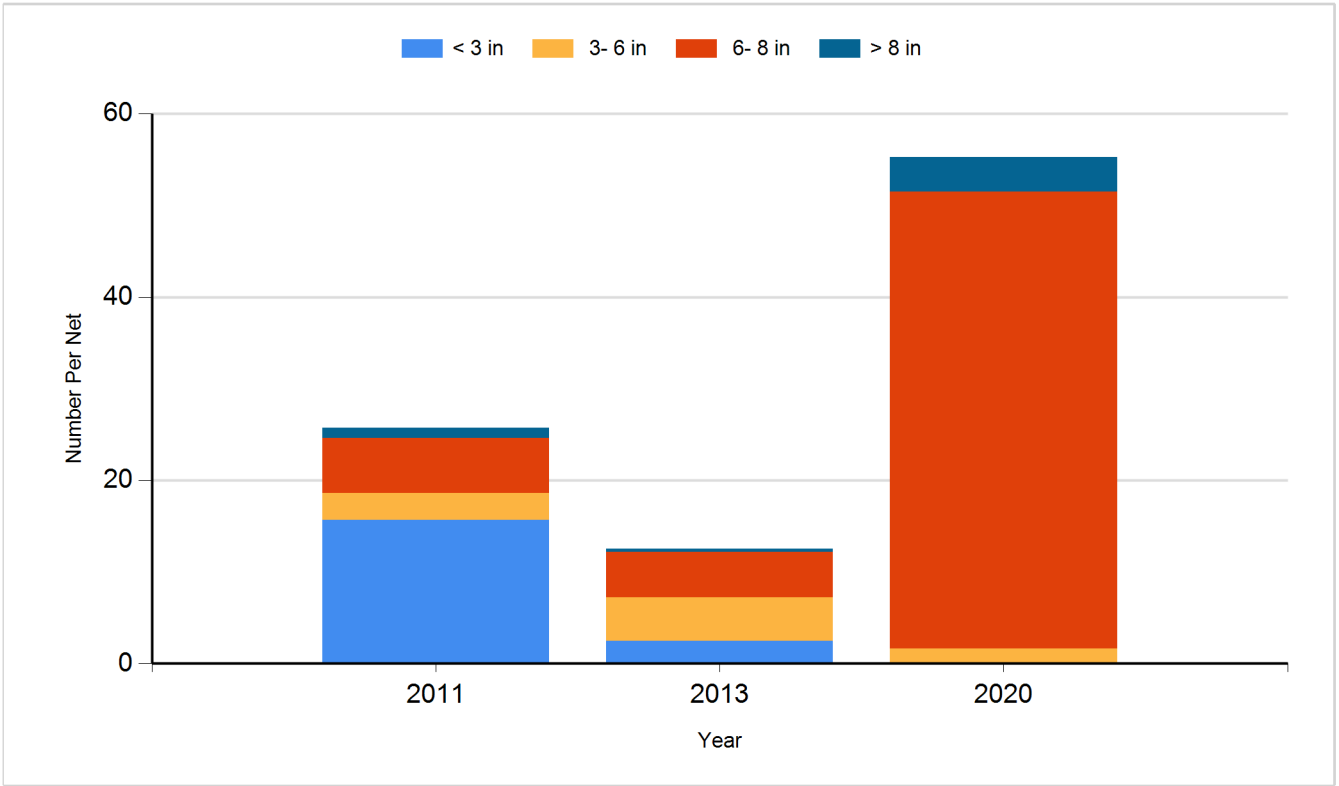
Species: Black Crappie
Gear: frame net (std 3/4 in)



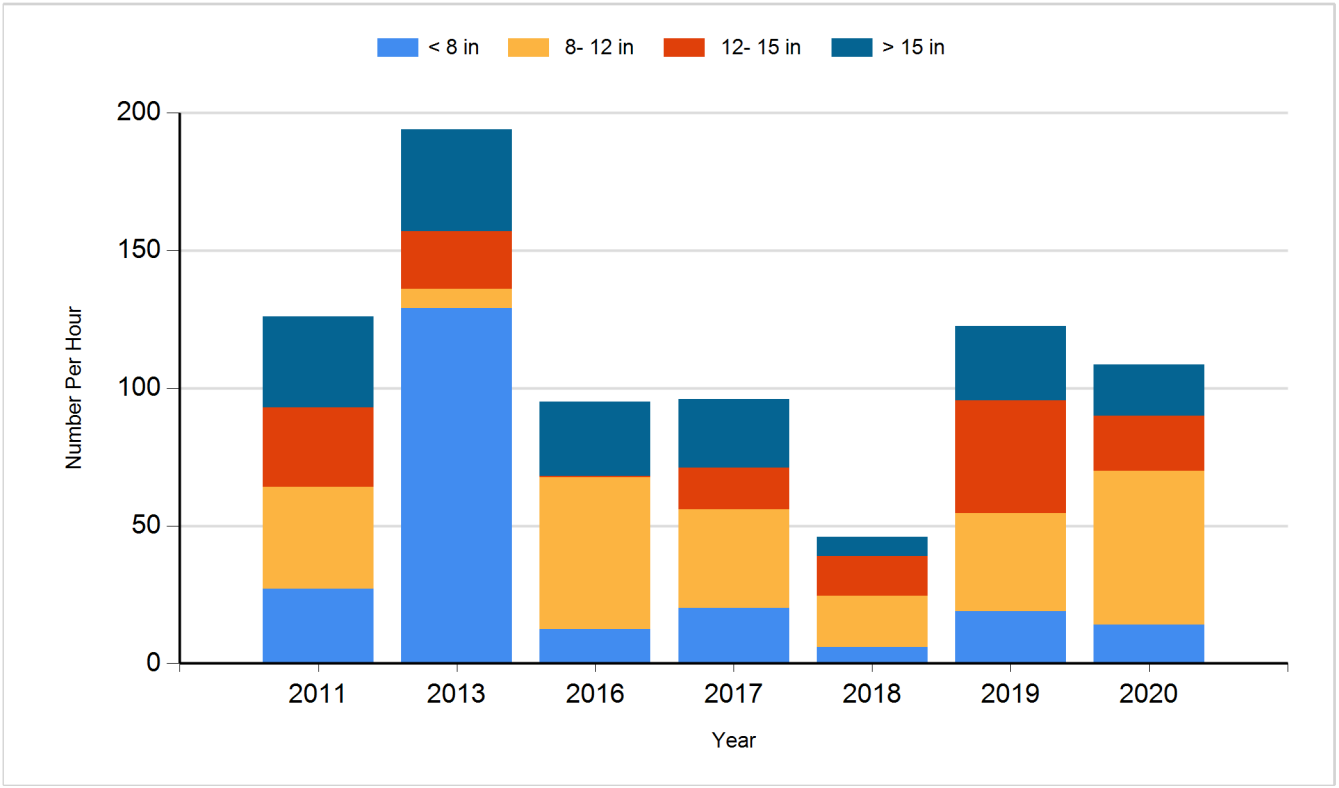
Species: Bluegill
Gear: AFS std frame net



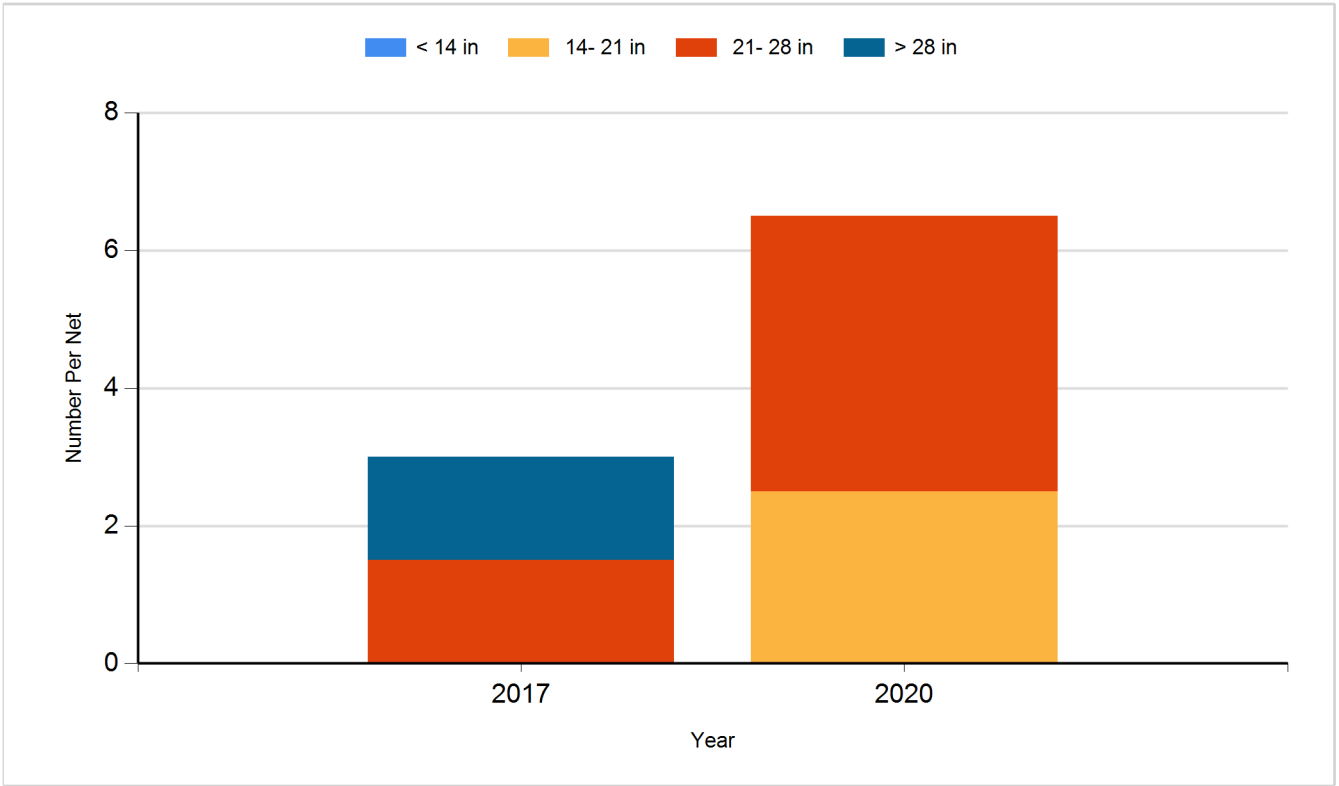
Species: Bluegill
Gear: frame net (std 3/4 in)



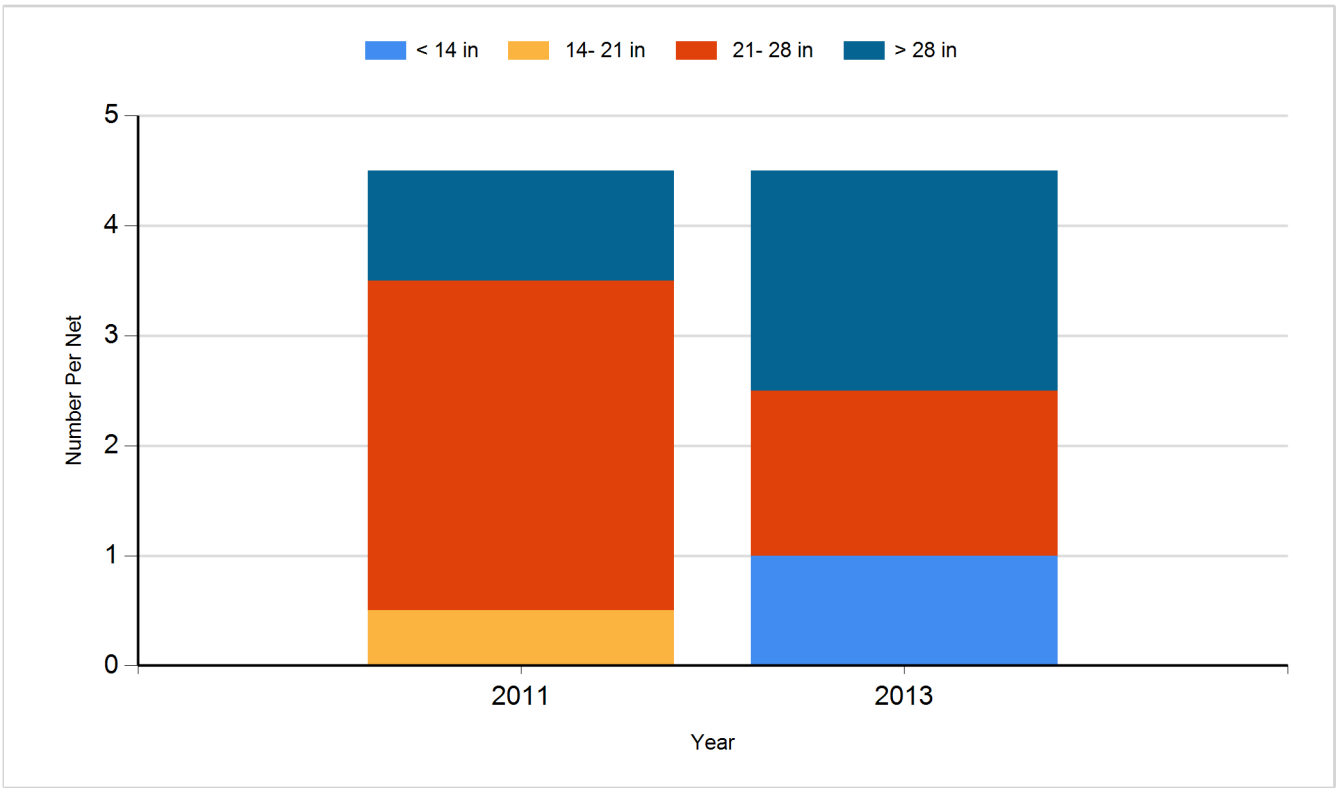
Species: Largemouth Bass
Gear: boat shocker (night)



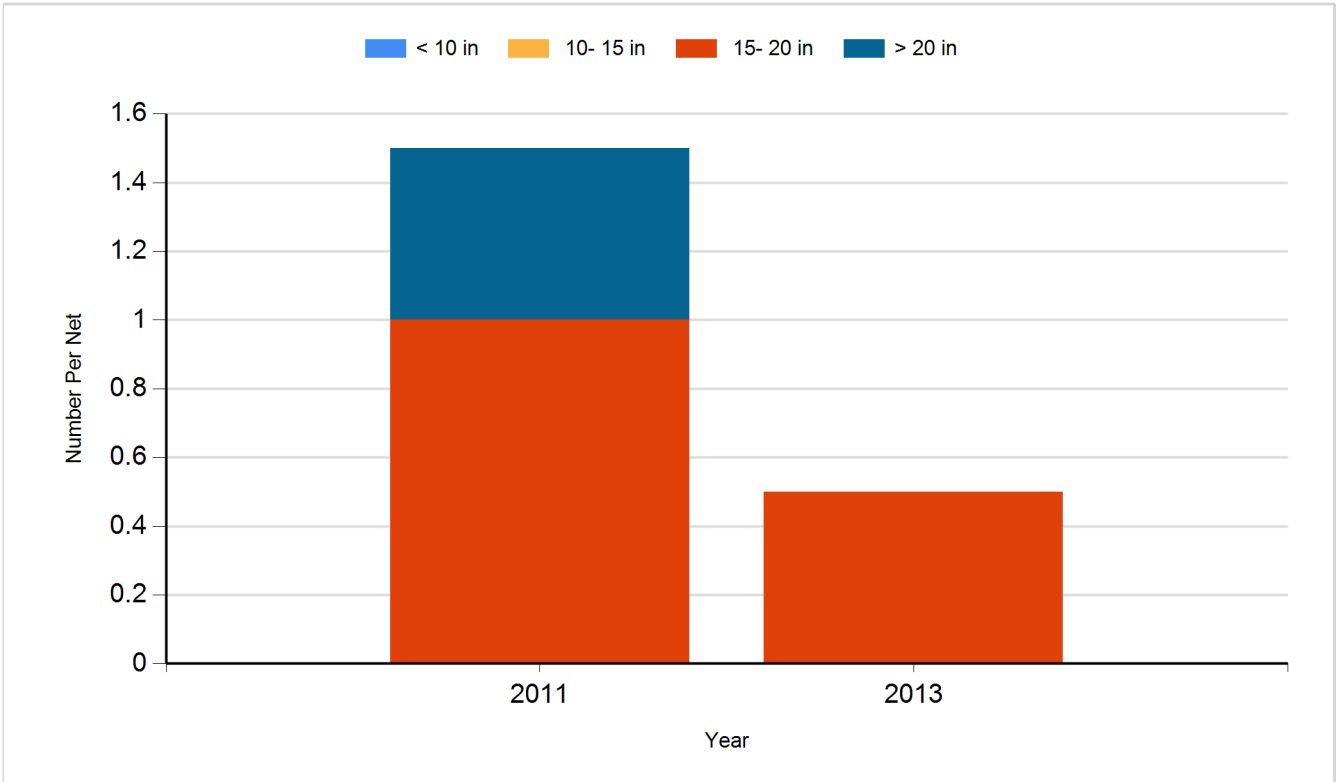
Species: Northern Pike
Gear: AFS std gill net



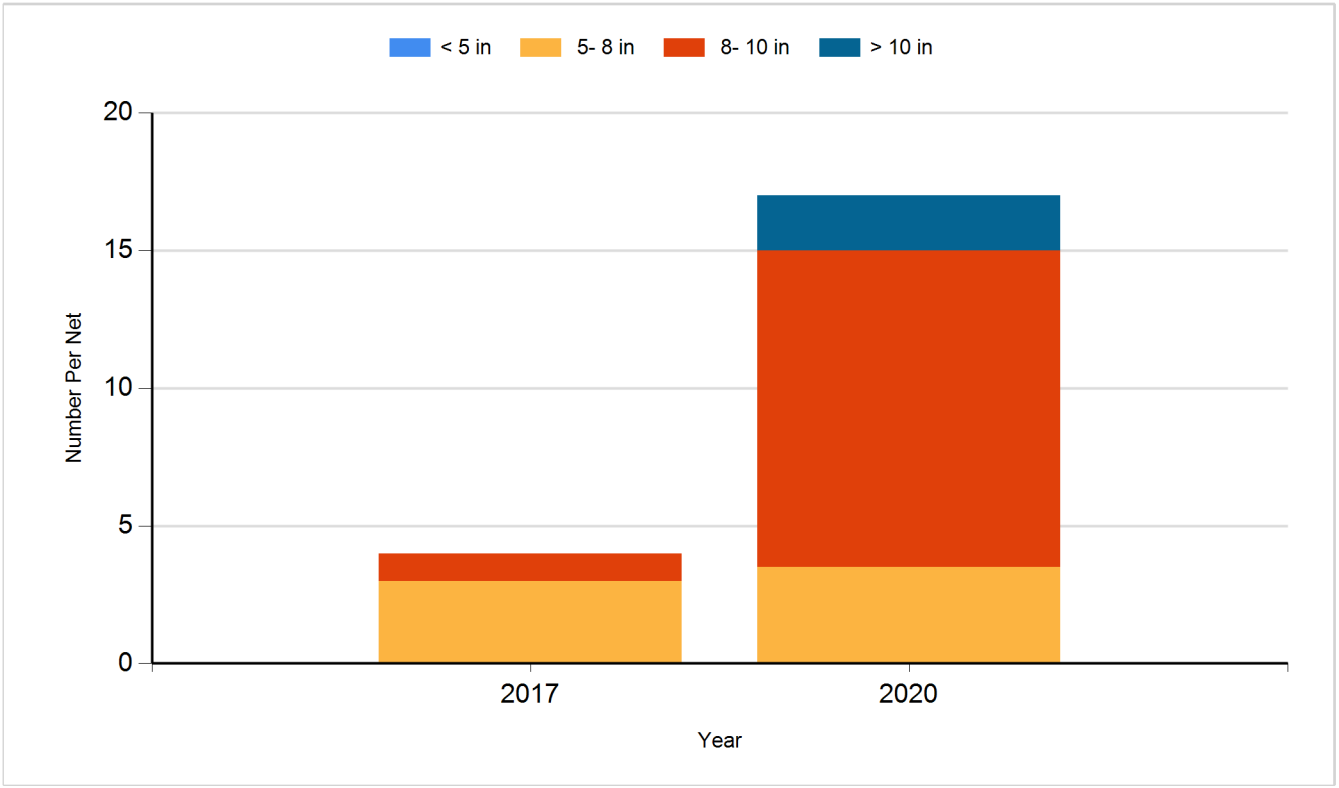
Species: Northern Pike
Gear: std exp gill net



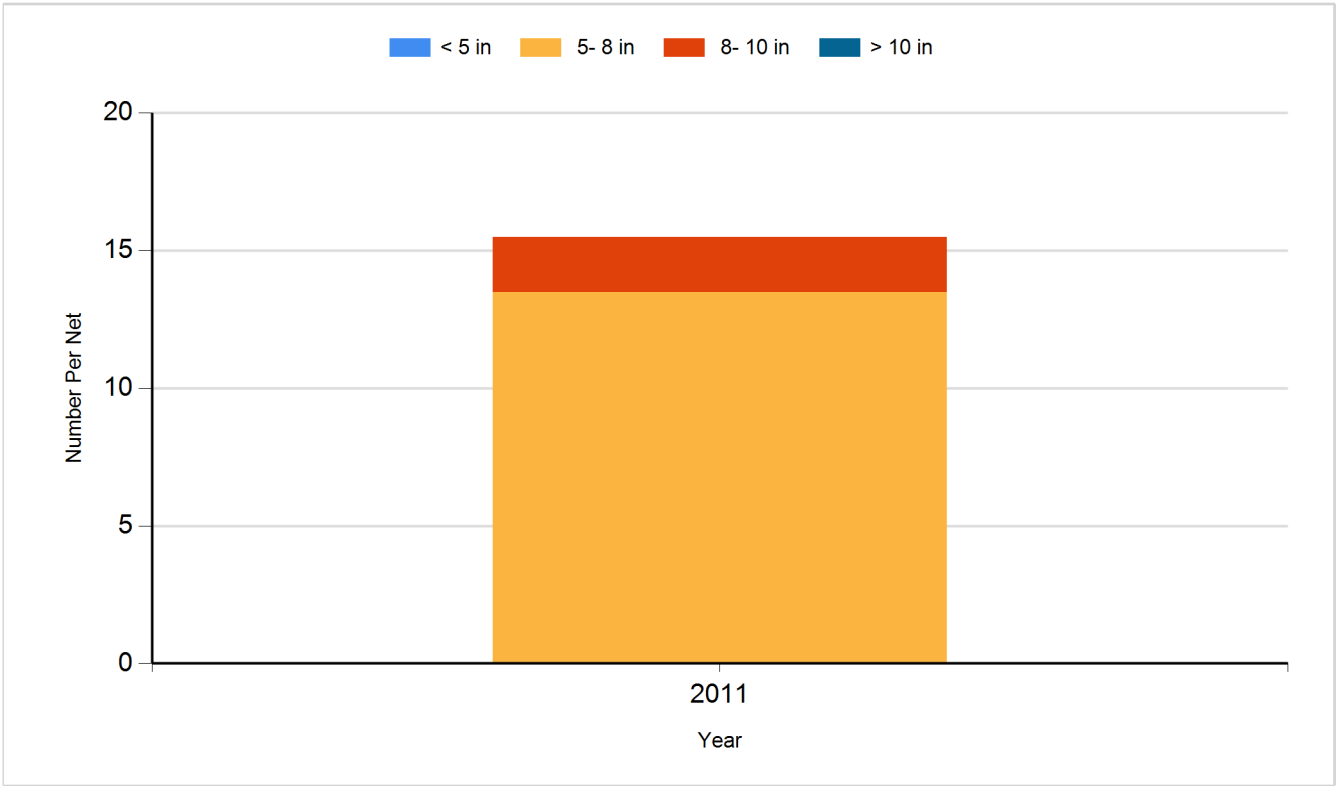
Species: Walleye
Gear: std exp gill net



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
2011	Walleye	Large Fingerling	1,705
2013	Walleye	Large Fingerling	2,356
2015	Walleye	Large Fingerling	540
2019	Walleye	Small Fingerling	5,845