Waggoner Lake Survey Summary

Waggoner Lake is a 107-acre impoundment located 3 miles North of Philip. Waggoner is a multispecies fishery with the primary species being Largemouth Bass, Bluegill, Black Crappie and Northern Pike. Other species include Black Bullhead, Yellow Perch, Green Sunfish, Smallmouth Bass and White Sucker. In 2024, a fall daytime electrofishing survey and a summer frame net survey was completed.

Black bullhead. Black Bullhead were the most abundant species in the frame net sample at 165.6 per net. Most of the fish were between 7 to 11 inches.

Bluegill. Bluegill catch averaged 59.2 fish per net. Most fish were between 5 and 7.5 inches.

Largemouth bass. The 2024 electrofishing survey captured 29 bass for a catch rate of 25.9 fish per hour. Bass ranged in size from 4 to 21 inches.

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

Waggoner, Haakon County

BAD-Lake-2426-000

2024

Lake Information

Name: Waggoner

County: Haakon

Surface Area: 95 Acres

Surveys and Investigations

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

Gear	Date	Effort
boat shocker (day)	Oct 02, 2024	3923 seconds
frame net (std 3/4 in)	Jun 10, 2024	5 net-nights

Common Fish Species Present

Northern Pike

Largemouth Bass

Yellow Perch

Bluegill

Black Crappie

Black Bullhead

Green Sunfish

White Sucker

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
boat shocker (day)	Largemouth Bass	29	24.9	10.5	36	14	36	14	114	2
frame net (std 3/4 in)	Black Bullhead	825	151.8	57.7	55	2	2	1	99	1
	Black Crappie	26	5.2	4.1	62	15	0		94	1
	Bluegill	295	59.0	44.2	57	4	3	1	114	1
	Golden Shiner	76	0.0	0.0						
	Green Sunfish	45	9.0	6.3	89		11		125	3
	Largemouth Bass	3	0.0	0.0	0		0			
	White Sucker	2	0.4	0.6	100		100		92	5
	Yellow Perch	22	4.4	2.8	14		14		107	11

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	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Avg
AFS std frame net	Black Bullhead			1.5								1.50
	Black Crappie			8.3								8.30
	Bluegill			15.0								15.00
	Golden Shiner			0.0								0.00
	Green Sunfish			0.7								0.70
AFS std gill net	Black Bullhead			0.3	4.5	0.0						1.60
	Black Crappie			2.5	0.0	1.0						1.17
	Golden Shiner			0.0	0.0	0.0						0.00
	Largemouth Bass			0.0	0.5	0.0						0.17
	Northern Pike			0.8	0.0	0.0						0.27
	White Sucker			2.5	1.0	0.0						1.17
	Yellow Perch			0.0	1.0	0.0						0.33
boat shocker (day)	Largemouth Bass							35.2	29.5	9.6	24.9	24.80
boat shocker (night)	Largemouth Bass	45.0	29.0	20.0	44.0	24.4	16.0					29.73
	Walleye*	0.0	0.0	0.0	0.0	0.0	0.0					0.00
frame net (std 3/4 in)	Black Bullhead	1.1			2.8	10.4	34.0	527.8	166.8		151.8	127.81
	Black Crappie	42.1			2.5	19.9	50.7	36.3	25.6		5.2	26.04
	Bluegill	72.4			3.5	11.3	11.0	10.0	19.0		59.0	26.60
	Channel Catfish	0.0			0.0	0.0	0.0	0.8	0.6		0.0	0.20
	Golden Shiner	0.0			0.0	0.0	0.0	0.0	0.0		0.0	0.00
	Green Sunfish	0.0			0.3	13.0	62.3	21.5	29.0		9.0	19.30
	Largemouth Bass	0.0			0.3	0.0	0.0	0.0	0.0		0.0	0.04
	Northern Pike	2.4			0.0	0.0	0.2	0.5	0.0		0.0	0.44
	Sunfish Hybrid	0.0			0.0	0.0	0.0	0.0	5.2		0.0	0.74
	White Sucker	0.4			0.0	0.0	0.0	0.5	0.4		0.4	0.24
	Yellow Perch	0.6			0.0	0.1	1.2	9.0	15.8		4.4	4.44
std exp gill net	Black Bullhead	1.0										1.00
	Black Crappie	7.0										7.00
	Bluegill	3.0										3.00
	Golden Shiner	0.0										0.00
	Largemouth Bass	0.5										0.50
	Northern Pike	2.0										2.00
	White Sucker	0.5										0.50

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	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
AFS std frame net	Black Bullhead	PSD			89							
		PSD-P			56							
		Wr			100							
	Black Crappie	PSD			82							
		PSD-P			0							
		Wr			91							
	Bluegill	PSD			98							
		PSD-P			63							
		Wr			112							
	Green Sunfish	PSD			50							
		PSD-P			25							
		Wr			125							
AFS std gill net	Black Bullhead	PSD			100	100						
		PSD-P			100	33						
		Wr			104	113						
	Black Crappie	PSD			50		100					
		PSD-P			10		100					
		Wr			98		108					
	Largemouth Bass	PSD				0						
		PSD-P				0						
		Wr				121						
	Northern Pike	PSD			100							
		PSD-P			100							
		Wr			88							
	White Sucker	PSD			100	100						
		PSD-P			100	100						
		Wr			102	104						
	Yellow Perch	PSD				50						
		PSD-P				0						
		Wr				110						
boat shocker (day)	Largemouth Bass	PSD							63	81	88	36
		PSD-P							25	41	38	36

			Year									
Gear	Species	Index	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
boat shocker (day)	Largemouth Bass	Wr							110	105	123	114
boat shocker (night)	Largemouth Bass	PSD	84	48	100	66	62	69				
		PSD-P	51	28	30	20	33	31				
		Wr	107	110	109	108	115	116				
frame net (std 3/4 in)	Black Bullhead	PSD	100			100	10	27	53	56		55
		PSD-P	100			73	5	0	3	3		2
		Wr	93			103	106	95	92	83		99
	Black Crappie	PSD	93			100	84	50	97	97		62
		PSD-P	0			0	72	19	13	3		0
		Wr	95			97	100	104	94	90		94
	Bluegill	PSD	98			100	90	80	95	17		57
		PSD-P	25			93	71	30	18	3		3
		Wr	102			118	125	127	114	111		114
	Green Sunfish	PSD				0	18	11	45	27		89
		PSD-P				0	3	0	1	2		11
		Wr				146	127	123	115	112		125
	Largemouth Bass	PSD				0						0
		PSD-P				0						0
		Wr				112						
	Northern Pike	PSD	79					0	50			
		PSD-P	16					0	0			
		Wr	94					98	109			
	White Sucker	PSD	100						100	100		100
		PSD-P	100						100	100		100
		Wr	86						101	89		92
	Yellow Perch	PSD	100				0	14	83	95		14
		PSD-P	100				0	14	28	18		14
		Wr	101				105	111	103	87		107
std exp gill net	Black Bullhead	PSD	100									
		PSD-P	0									
		Wr	112									
	Black Crappie	PSD	29									
		PSD-P	0									
		Wr	109									
	Bluegill	PSD	17									
		PSD-P	0									

			Year									
Gear	Species	Index	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
std exp gill net	Bluegill	Wr	116									
	Largemouth Bass	PSD	0									
		PSD-P	0									
		Wr	101									
	Northern Pike	PSD	50									
		PSD-P	0									
		Wr	92									
	White Sucker	PSD	100									
		PSD-P	100									
		Wr	103									

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	676	101 (2)	164 (36)	197 (12)	221 (160)	220 (107)	230 (294)	226 (66)			

Fish Condition

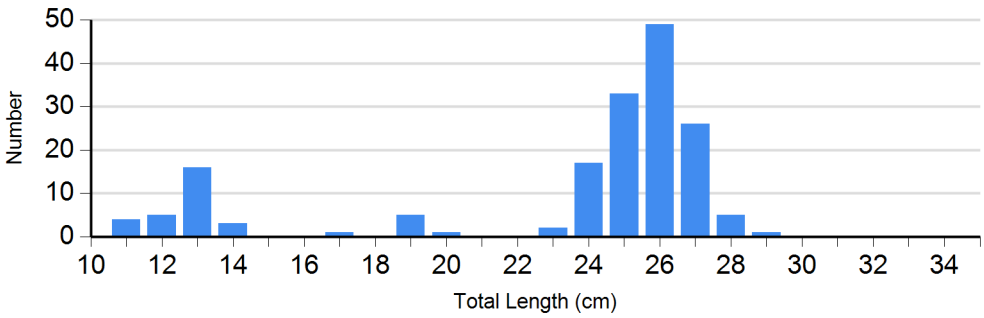
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2020	152	106 (0.5)	94	106 (0.8)	55	96 (0.7)	3	96 (1.2)
	2021	5	88 (4.5)	121	96 (0.4)	19	84 (0.7)	0	
	2022	4		120	90 (0.4)	4	75	0	
	2024	10	96 (2.1)	16	92 (1.2)	0		0	
Bluegill Frame Net	2020	13	130 (2.8)	33	131 (1.9)	19	117 (1.9)	1	116
	2021	2		31	116 (2.4)	7	103 (1.3)	0	
	2022	79	112 (1.1)	13	104 (2.8)	3	104	0	
	2024	128	119 (2.1)	158	111 (1.1)	9	97	0	
Largemouth Bass Electro Fishing	2020	5	117 (3.0)	6	114 (5.2)	5	117 (5.3)	0	
	2021	12	98 (2.2)	12	118 (2.1)	8	118 (2.4)	0	
	2022	5	93 (4.0)	11	101 (1.4)	11	114 (1.9)	0	
	2023	1	120	4	121 (0.9)	3	125 (7.6)	0	
	2024	18	114 (1.6)	0		9	115 (3.4)	1	102

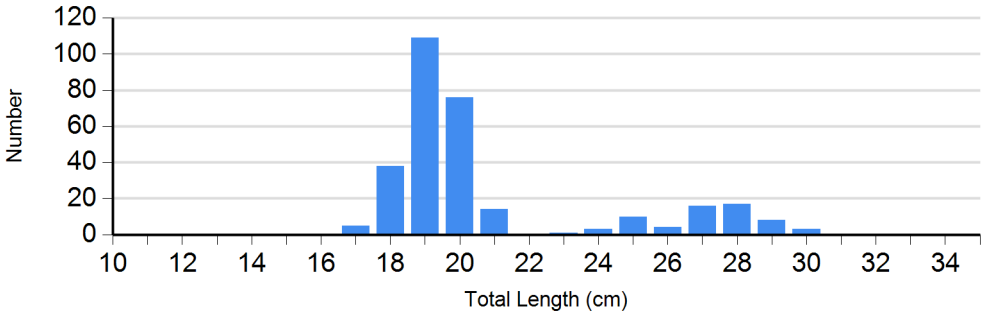
Length Frequency Distribution

Length frequency histogram of species sampled by year.

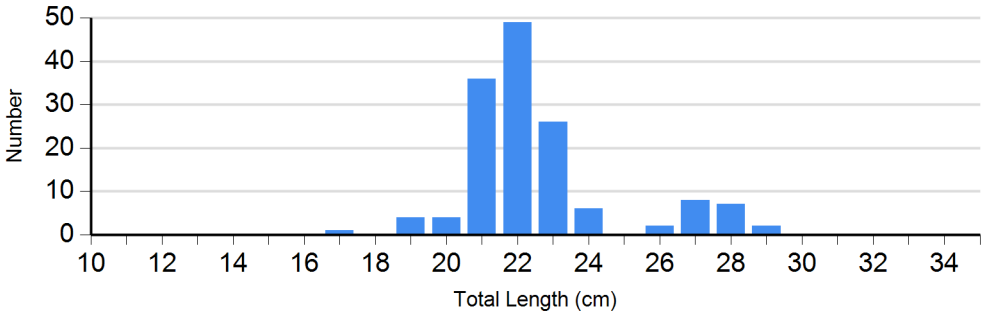
Species: Black Crappie
Gear: frame net (std 3/4 in)



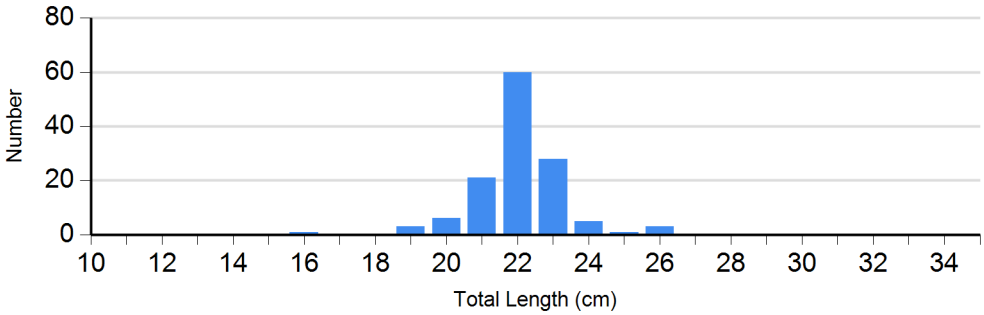
2019



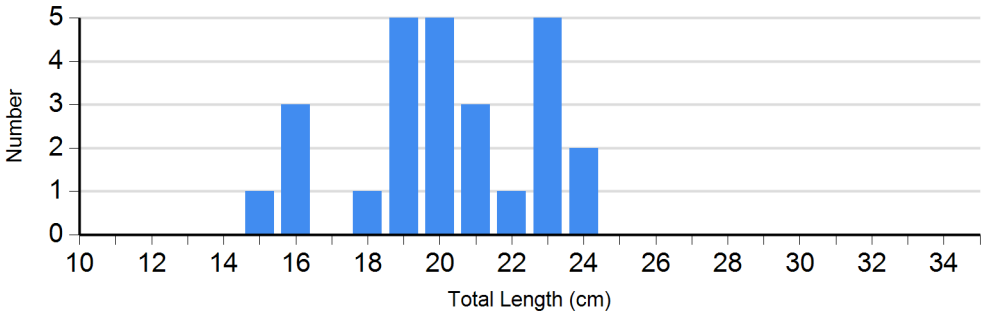
2020



2021

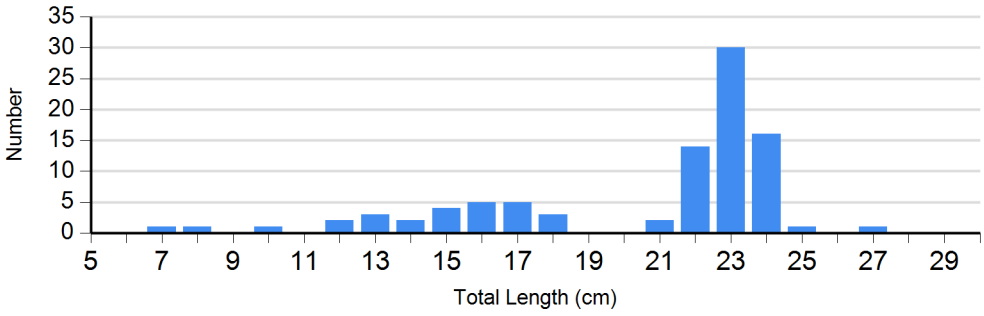


2022

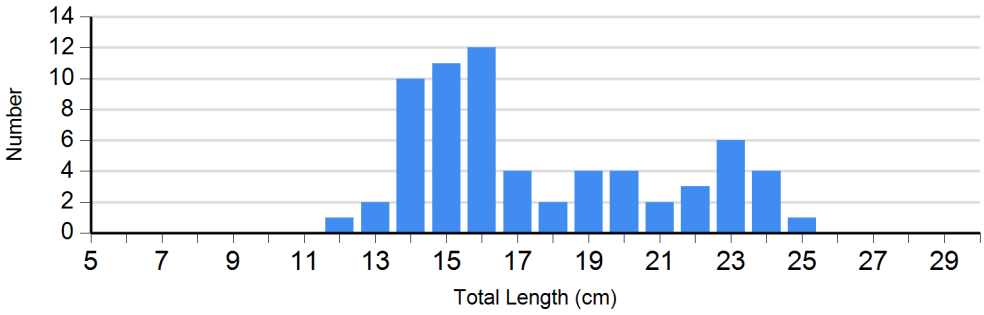


2024

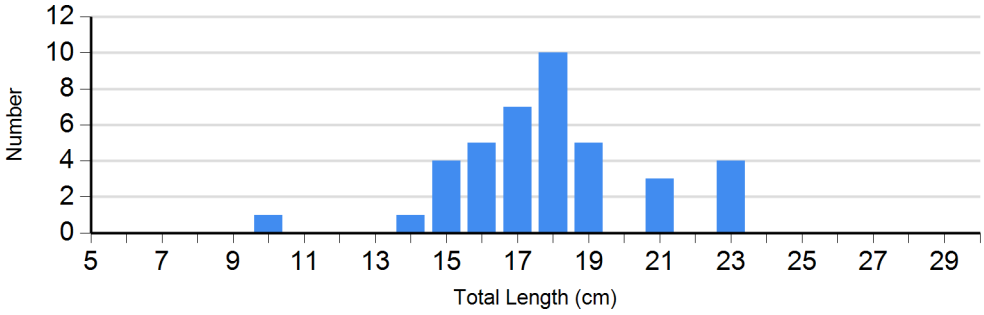
Species: Bluegill
Gear: frame net (std 3/4 in)



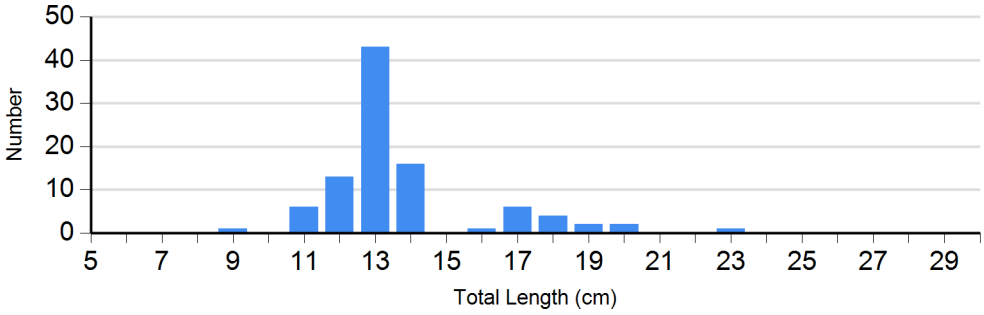
2019



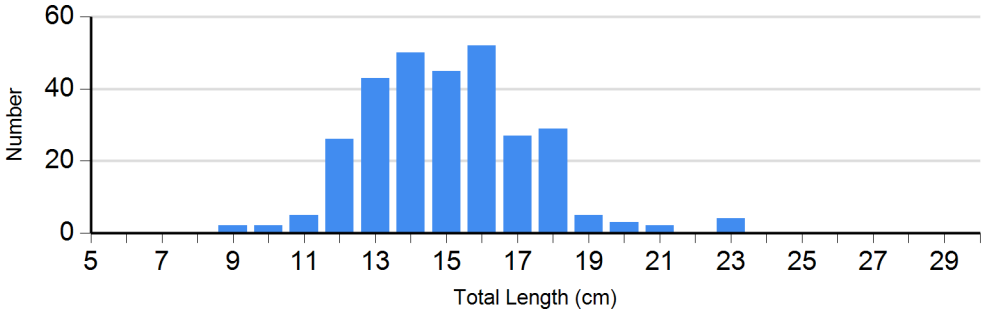
2020



2021

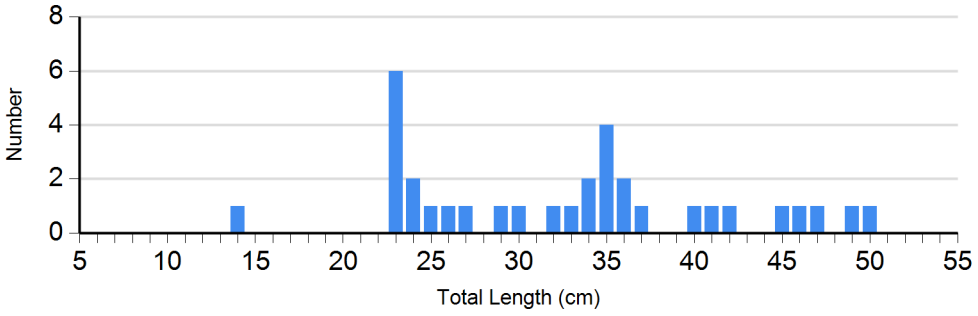


2022

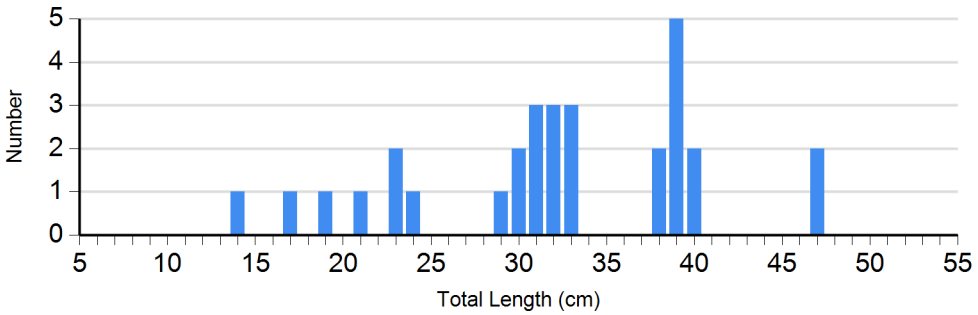


2024

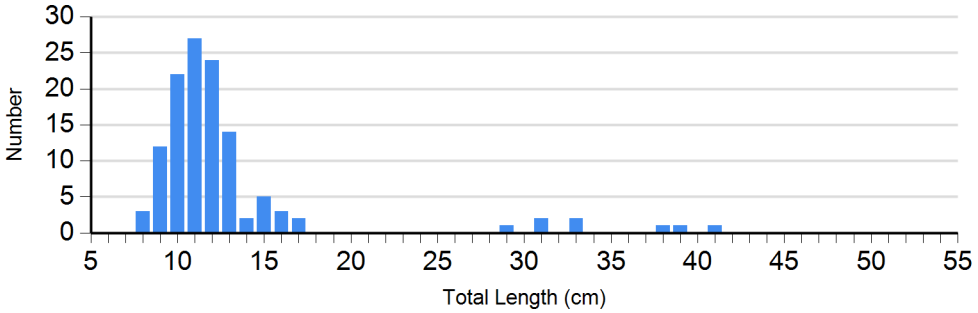
Species: Largemouth Bass
Gear: boat shocker (day)



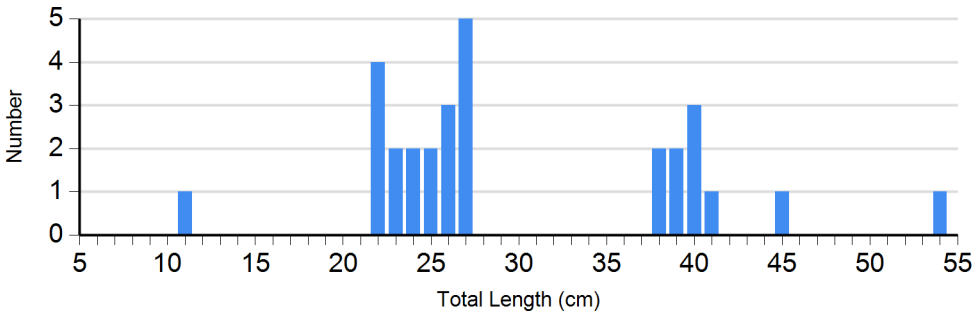
2021



2022

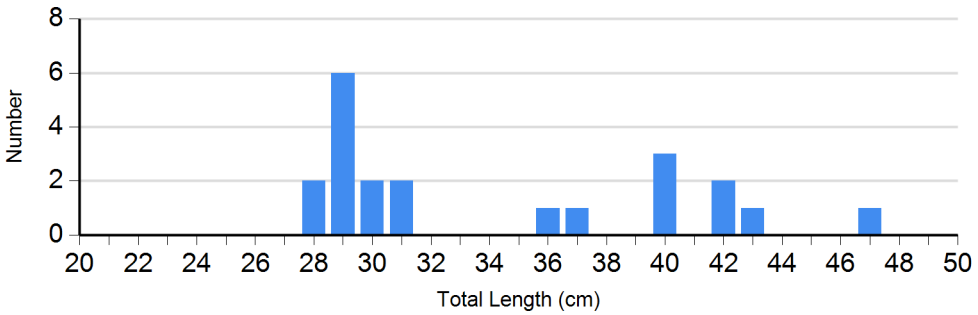


2023

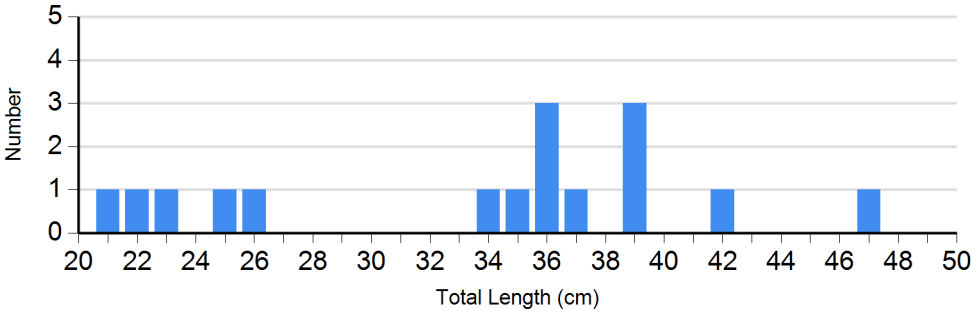


2024

Species: Largemouth Bass
Gear: boat shocker (night)



2019

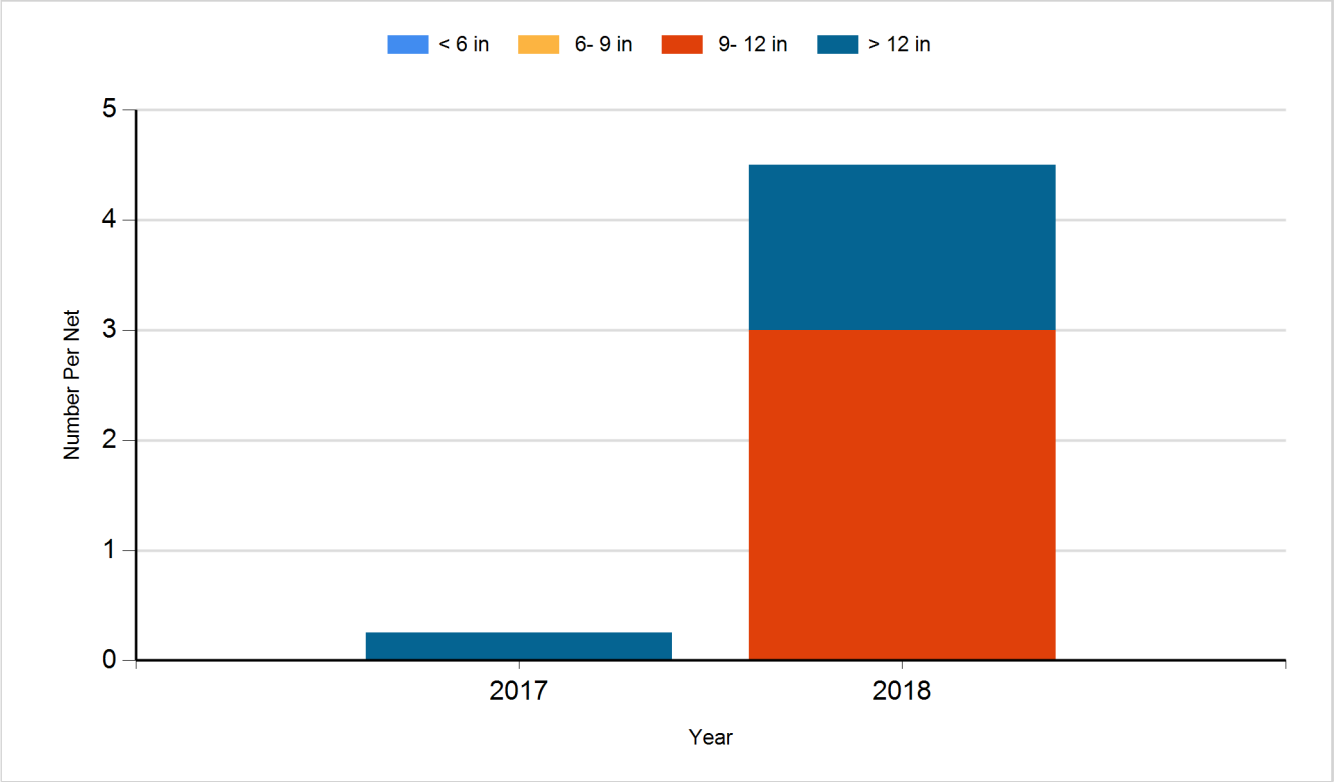

5
4
3
2
1
0
Number
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
50
Total Length (cm)

2020

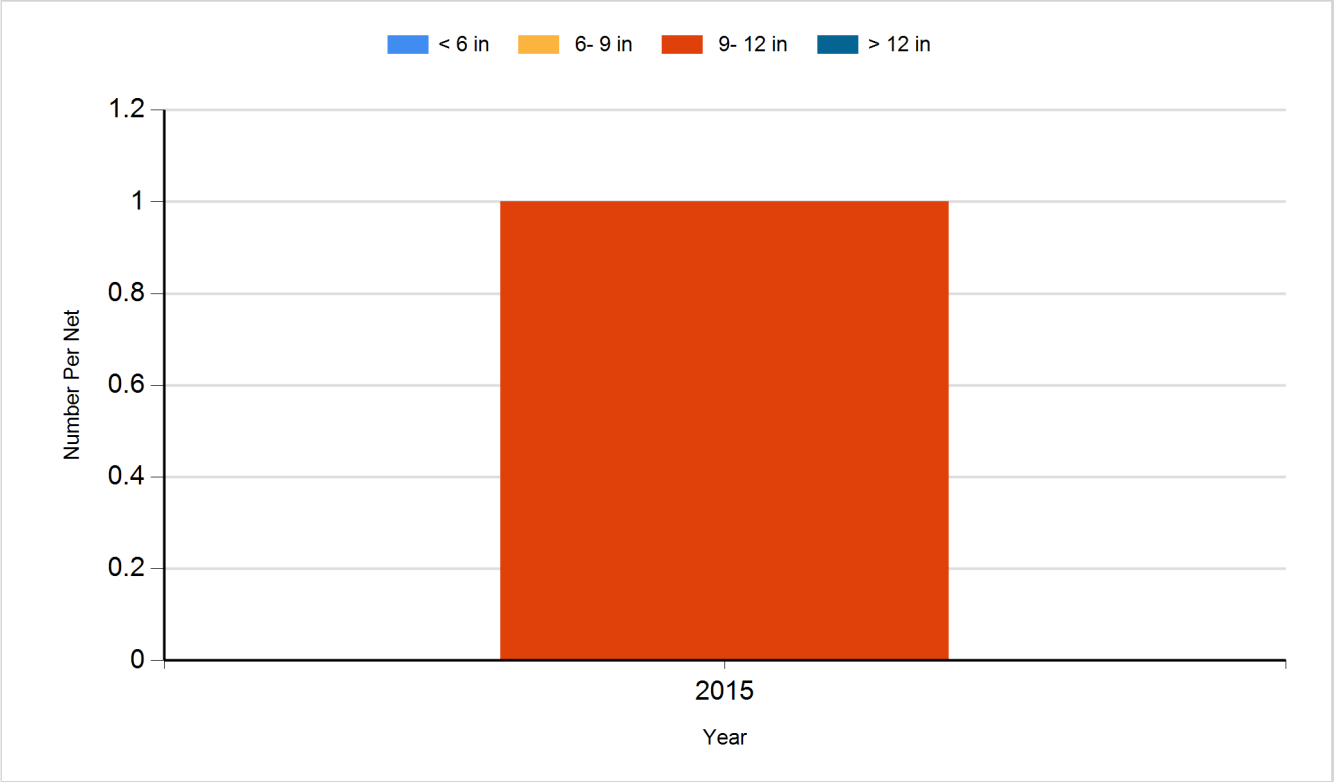
Historic Fish Sizes and Relative Abundance

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

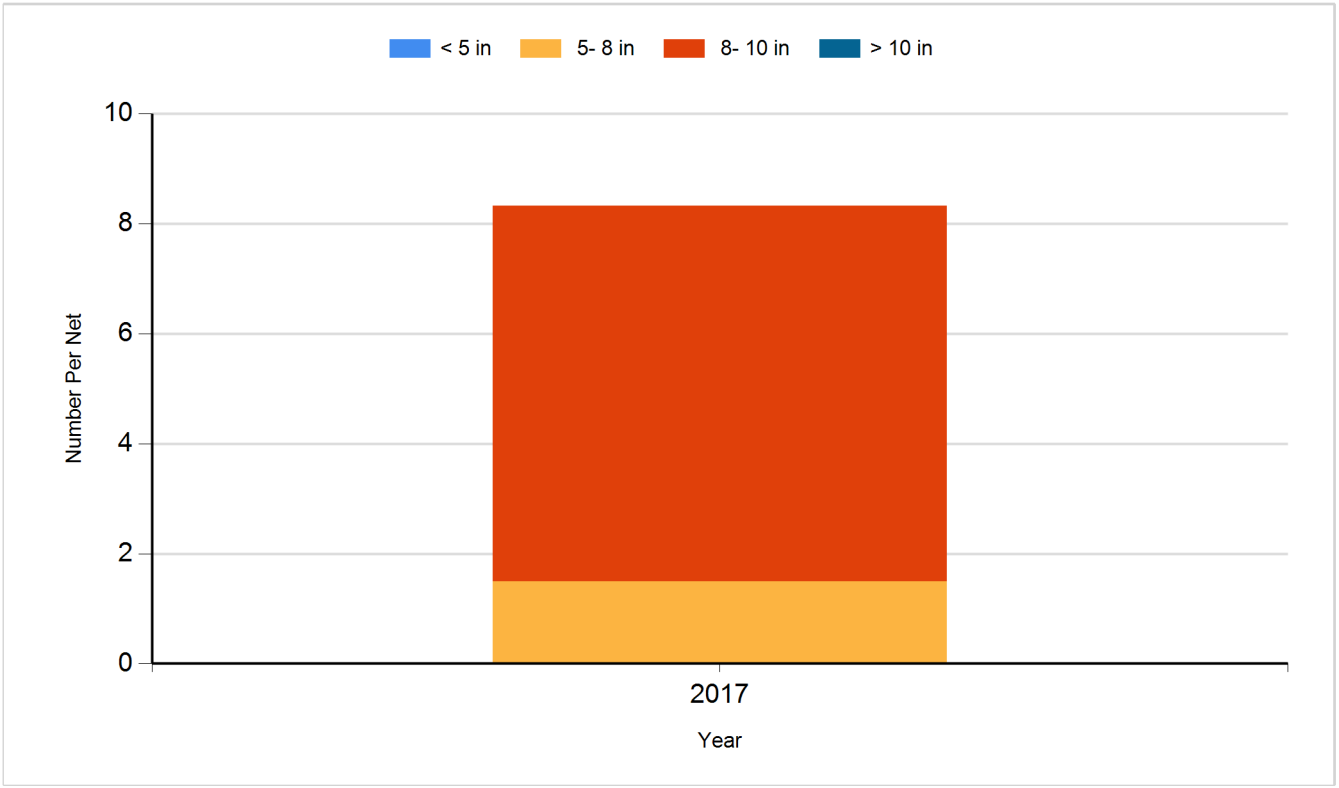
Species: Black Bullhead
Gear: AFS std gill net



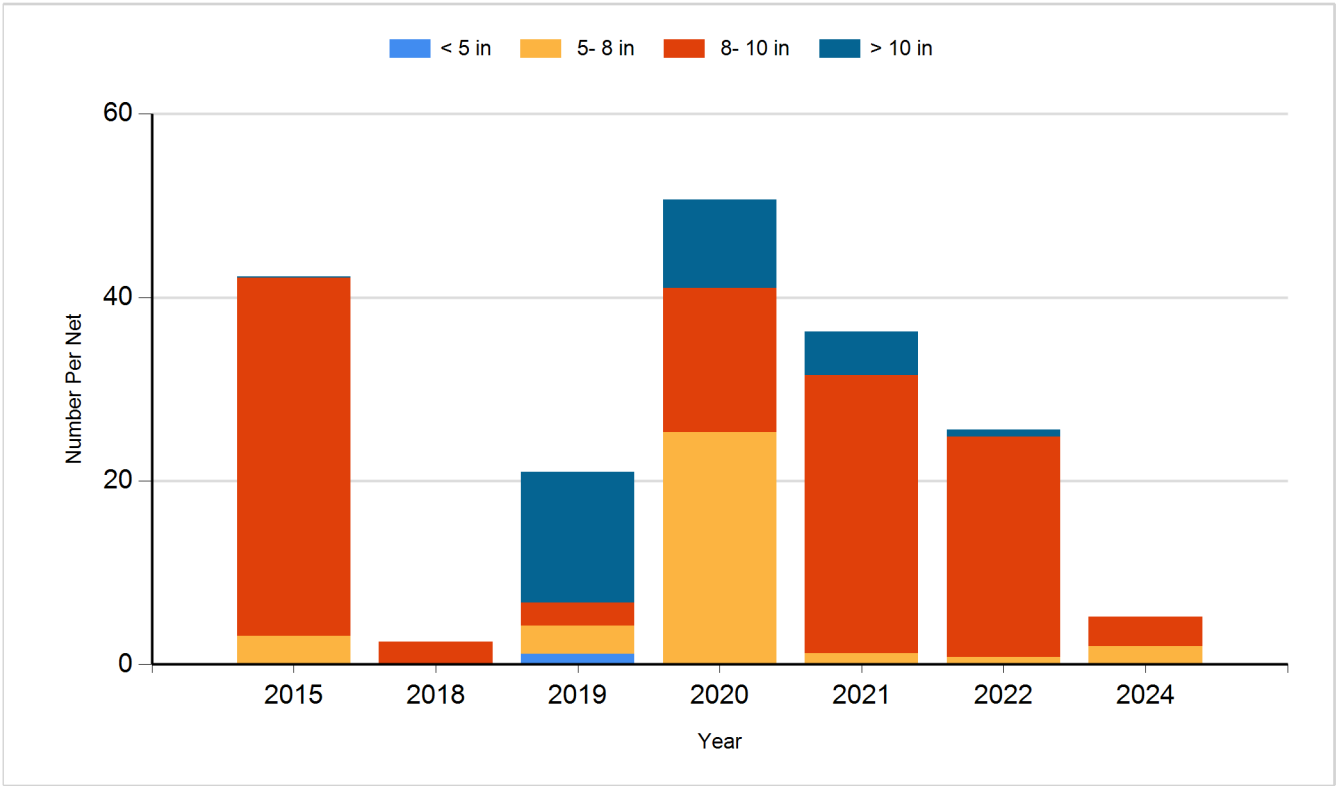
Species: Black Bullhead
Gear: std exp gill net



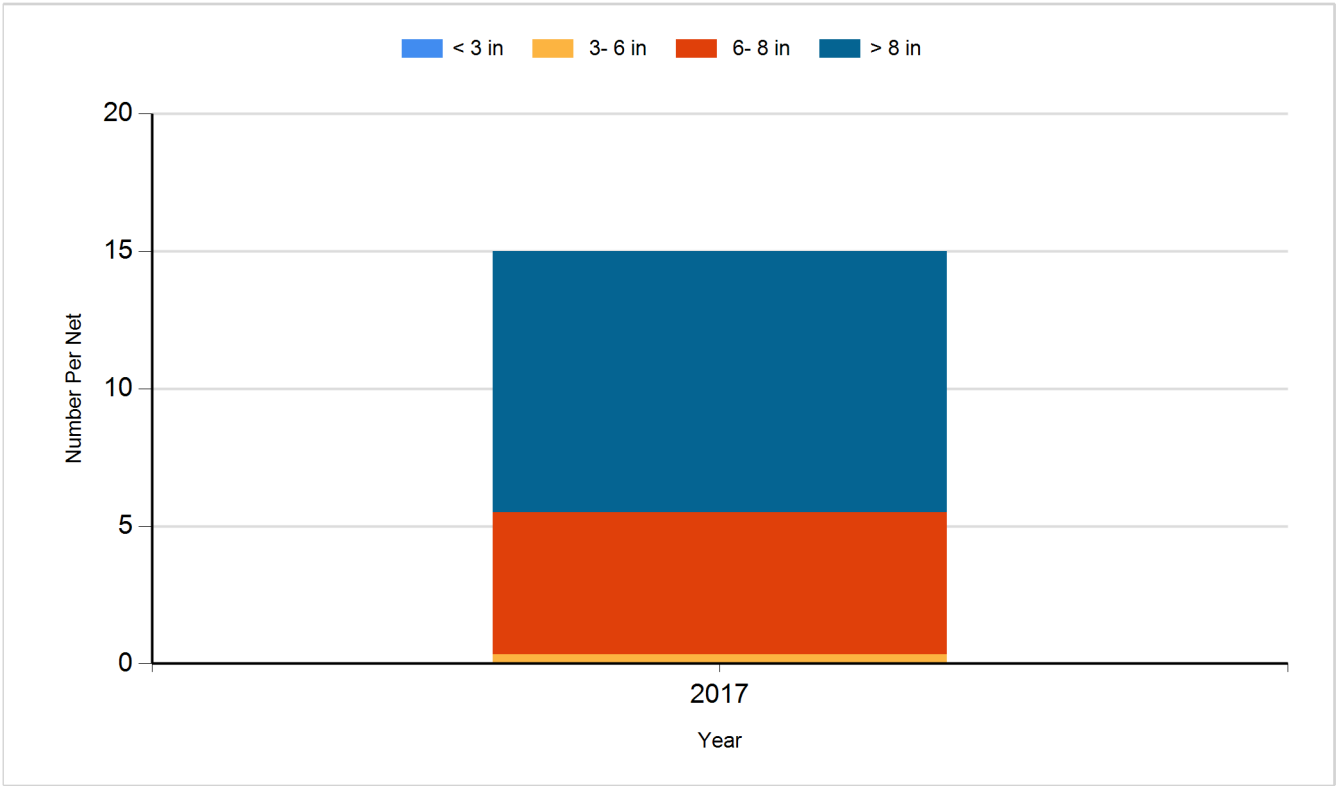
Species: Black Crappie
Gear: AFS std frame net



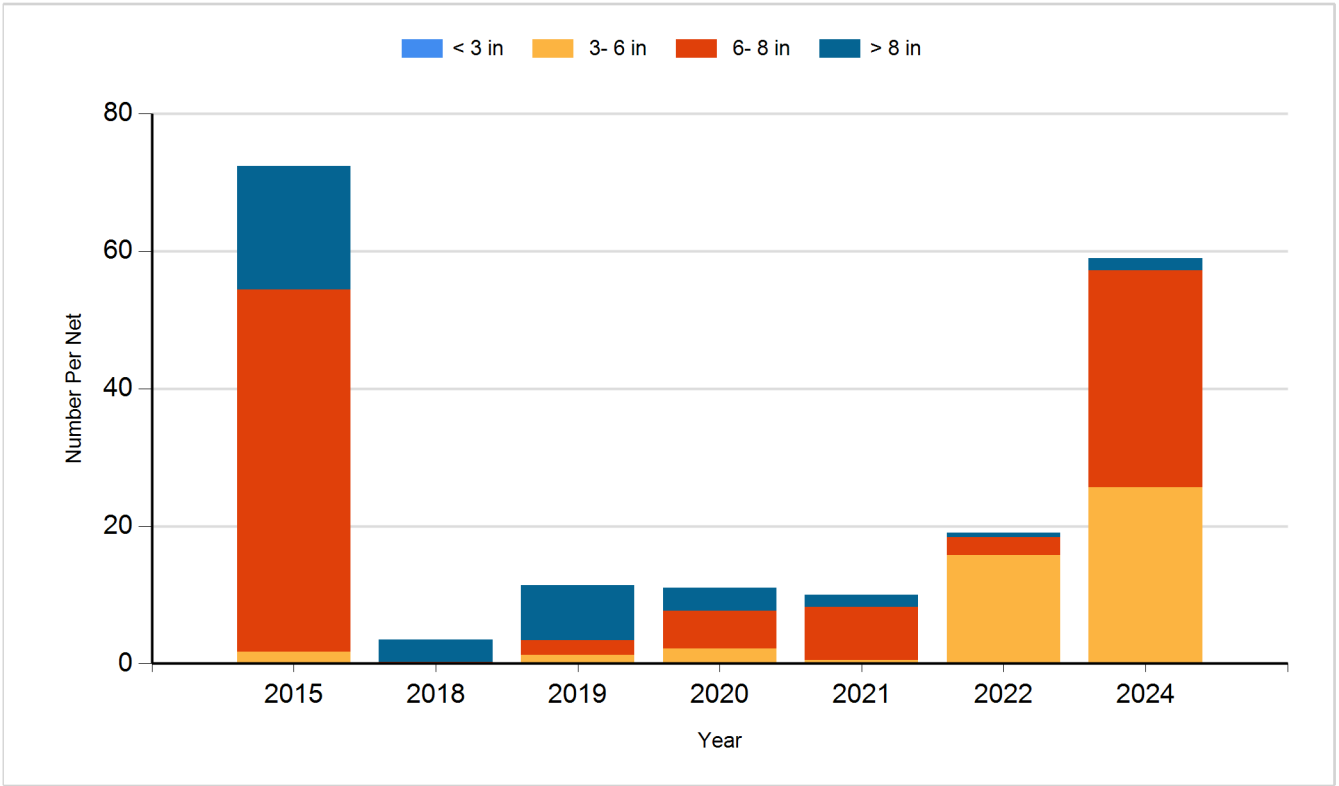
Species: Black Crappie
Gear: frame net (std 3/4 in)



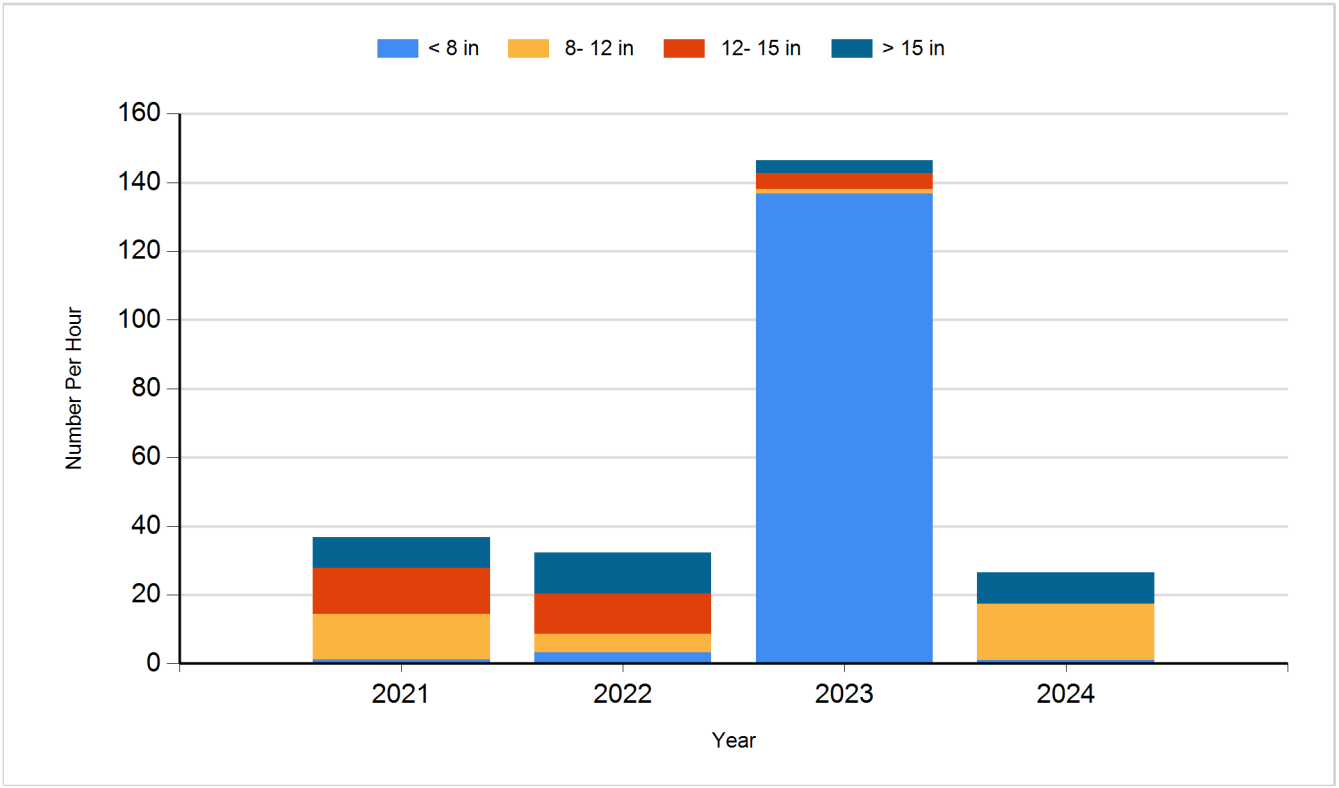
Species: Bluegill
Gear: AFS std frame net



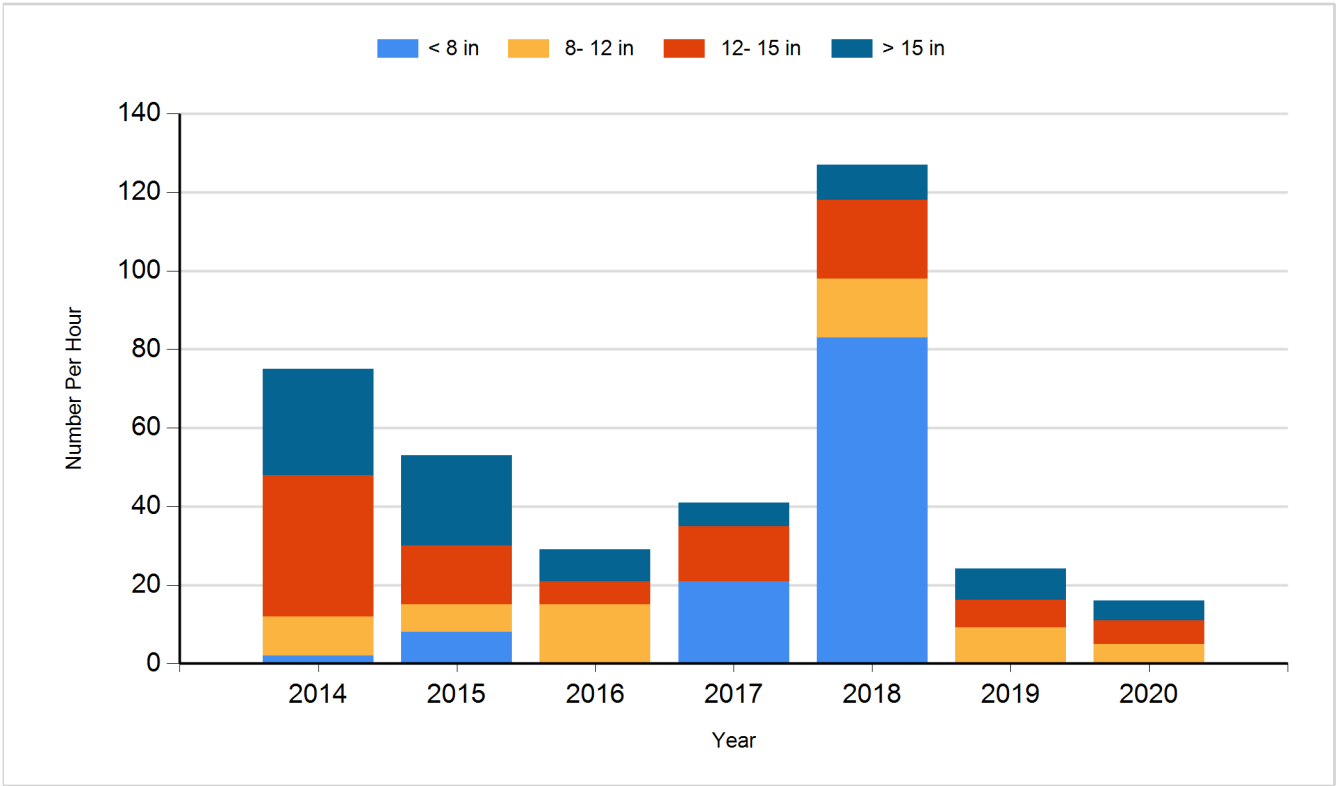
Species: Bluegill
Gear: frame net (std 3/4 in)



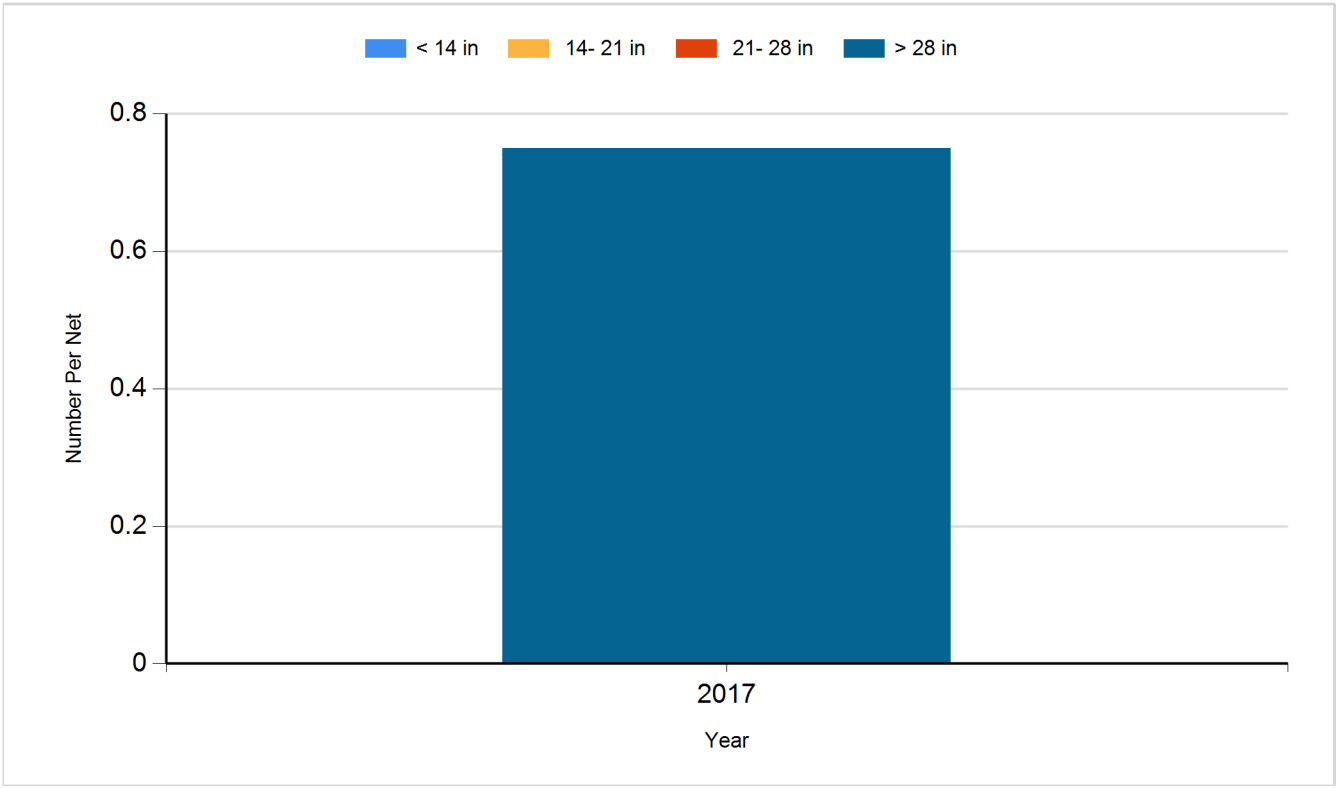
Species: Largemouth Bass
Gear: boat shocker (day)



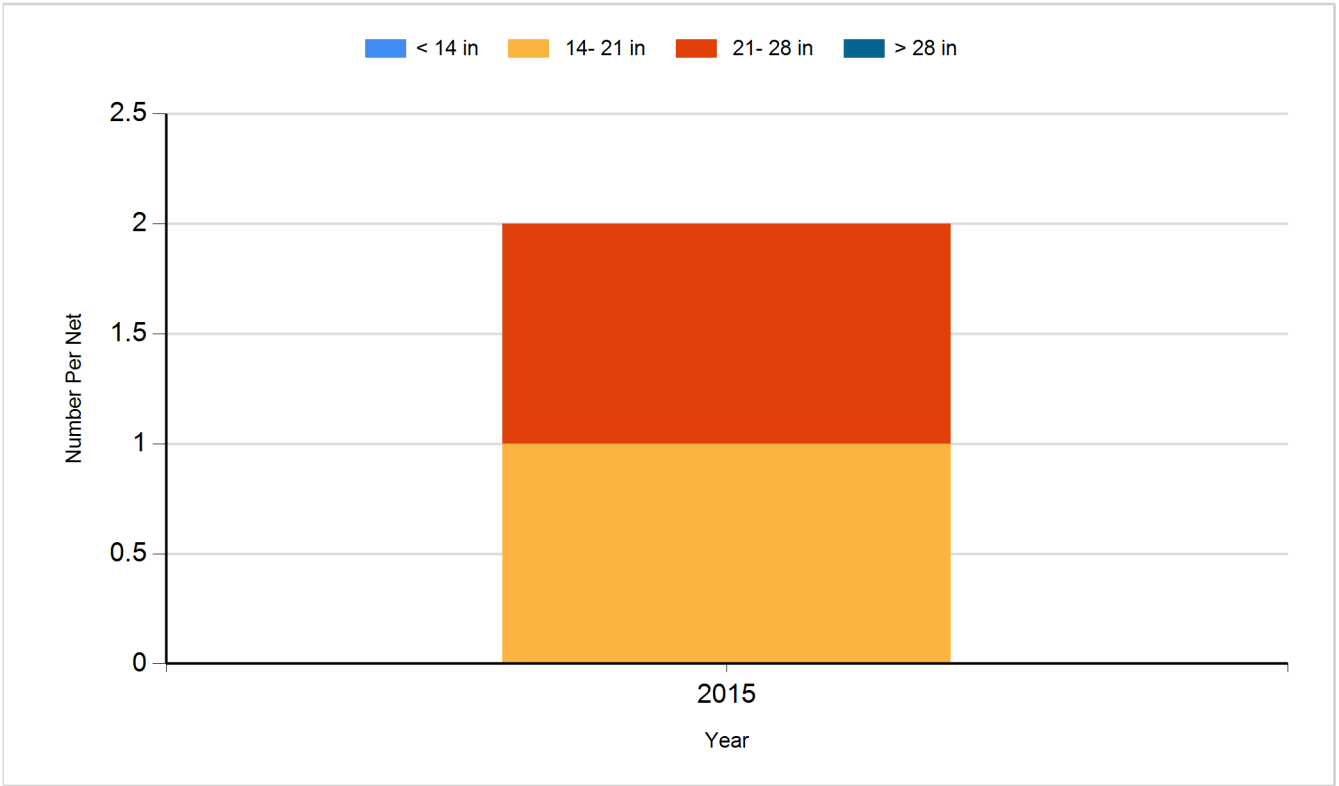
Species: Largemouth Bass
Gear: boat shocker (night)



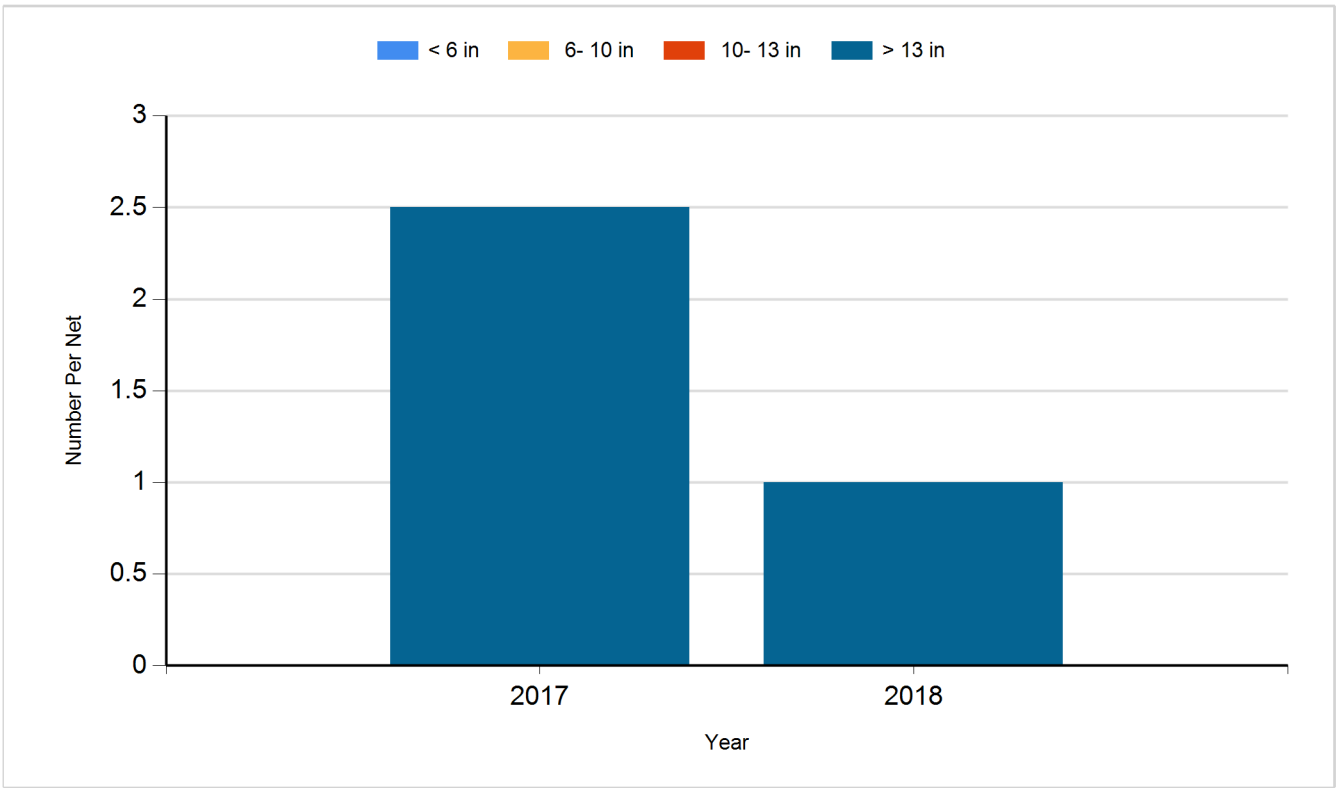
Species: Northern Pike
Gear: AFS std gill net



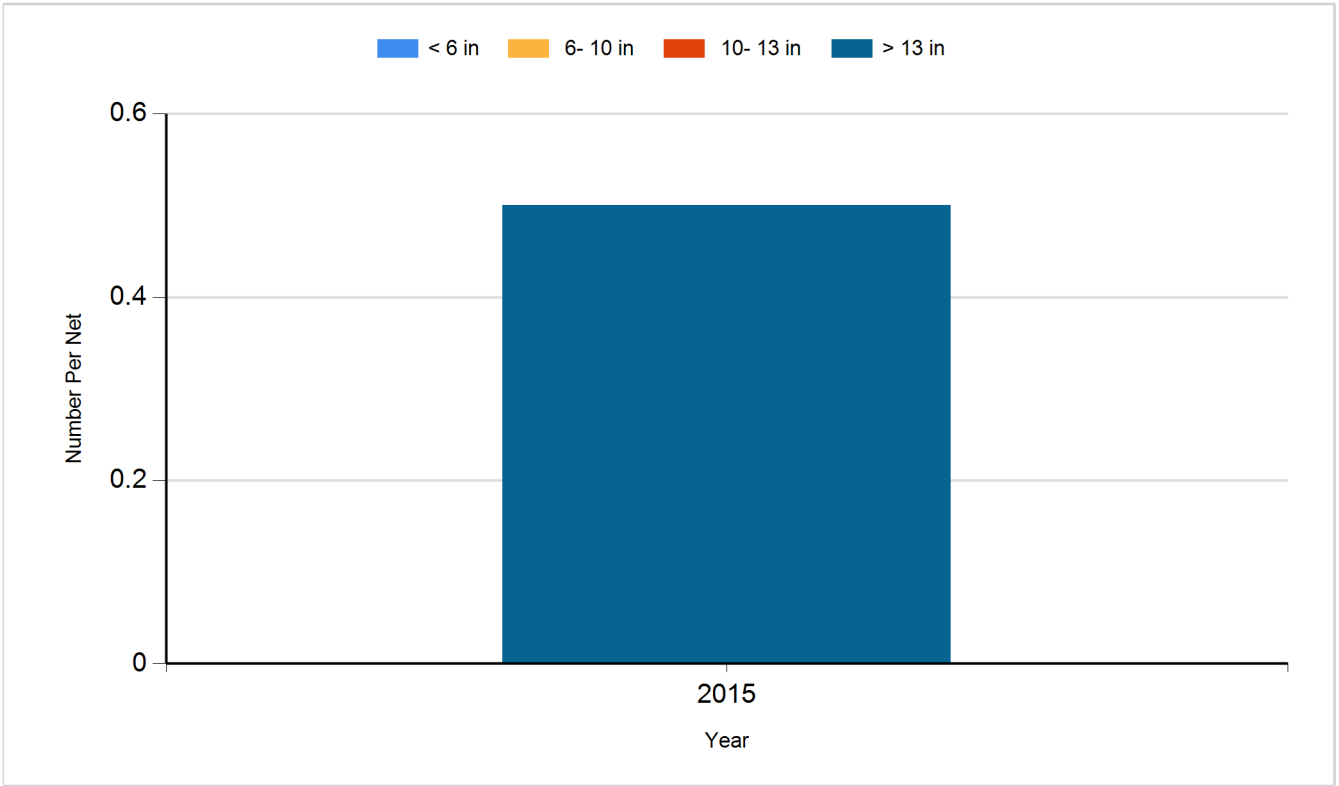
Species: Northern Pike
Gear: std exp gill net



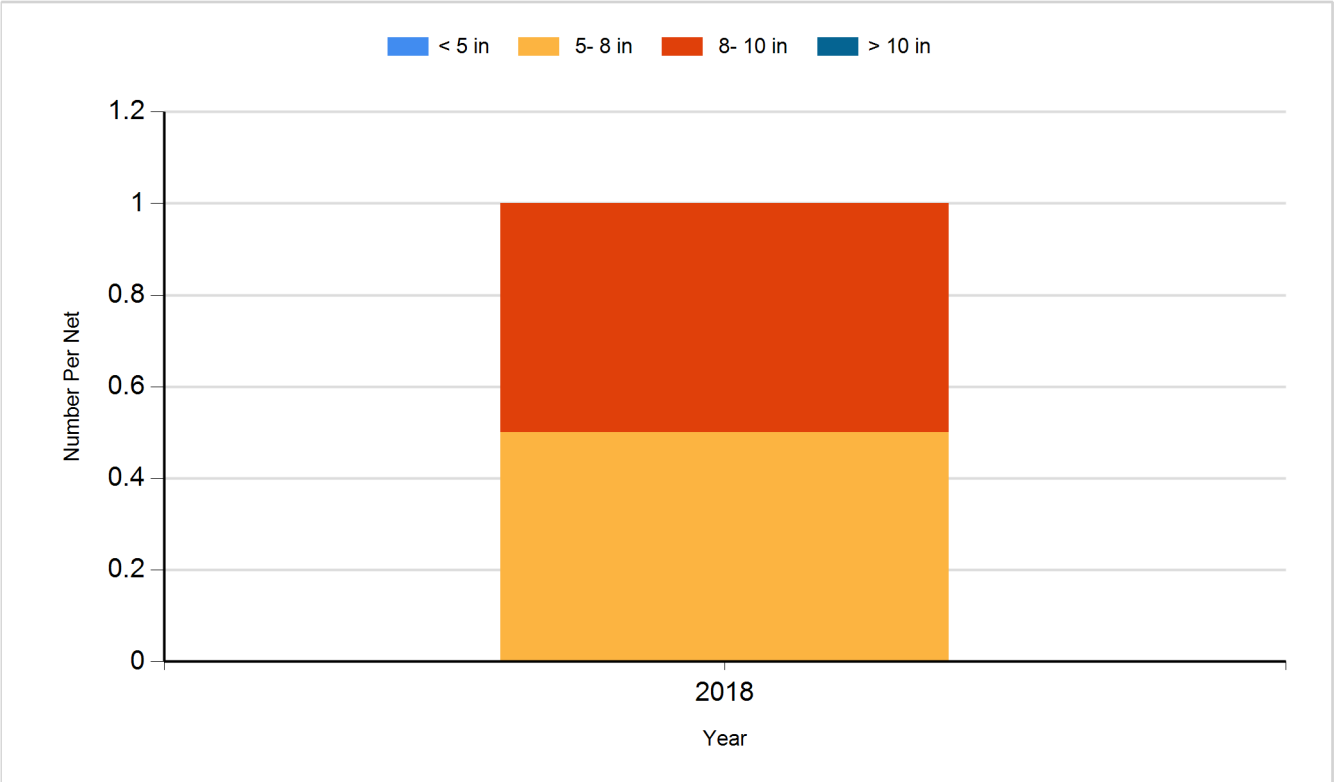
Species: White Sucker
Gear: AFS std gill net



Species: White Sucker
Gear: std exp 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
2017	Largemouth Bass	Fingerling	18,000
2017	Largemouth Bass	Fry	44,500
2018	Largemouth Bass	Juvenile	300
2021	Largemouth Bass	Adult	140
2021	Largemouth Bass	Fingerling	2,500
2022	Largemouth Bass	Adult	175
2022	Largemouth Bass	Fry	50,700
2023	Largemouth Bass	Adult	145