Curlew Lake Survey Summary

Curlew lake is a 136-acre impoundment located eight miles north, four miles east and another 1.5 miles north of the town of New Underwood. Primary species managed for include Black Crappie, Largemouth Bass, Smallmouth Bass, Walleye, with the main forage species being Gizzard Shad. Other species present in the lake are Bluegill, Yellow Perch, Black Bullhead, Northern Pike, Channel Catfish and Common Carp.

Black Crappie. A total of 152 crappie were sampled from the six, frame-net sample. Most fish ranged 9 to 12 inches. Since the introduction of Gizzard Shad, crappie sizes have increased in Curlew.

Largemouth Bass. One hour of fall electrofishing yielded a catch rate of 45.8 fish per hour. Last year, our catch rate was 10.0 fish per hour. Three different age classes were present in the survey with the largest bass in the 14–16-inch range. Bass were in excellent condition.

Walleye. Our daytime, fall electro fishing captured 155 walleyes in one hour of sampling. Three different age classes were present in the length frequency and ranged in size from 4-23inches. With the Gizzard Shad population doing so well, many of these fish should pass the 15-minimum, annually. Curlew was stocked with just over 41,000 small fingerlings in 2024.

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Curlew, Meade County
MCE-Lake-6-000
2024

Lake Information

Name: Curlew

County: Meade

Surface Area: 123 Acres

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Aug 09, 2024	4 net-nights
boat shocker (day)	Aug 16, 2024	3530 seconds
frame net (std 3/4 in)	May 23, 2024	6 net-nights

Common Fish Species Present

Black Crappie

Walleye

Largemouth Bass

Gizzard Shad

Common Carp

Channel Catfish

Smallmouth Bass

Yellow Perch

Bluegill

Black Bullhead

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 Crappie	8	1.8	1.0	86		86		100	4
	Channel Catfish	7	1.8	0.8	71		14		87	4
	Common Carp	35	8.0	3.8	34	13	0		83	1
	Gizzard Shad	98	3.5	1.9	100				106	3
	Walleye	38	8.8	4.8	40	13	3		86	1
	Yellow Perch	3	0.8	0.8	67		0		88	4
boat shocker (day)	Largemouth Bass	45	23.1	12.1	26	15	13		119	4
	Smallmouth Bass	1	1.0	1.5	100		0		105	
	Walleye*	158	161.4	23.1	6	4	1		92	1
frame net (std 3/4 in)	Black Bullhead	1	0.2	0.2	100		100		84	
	Black Crappie	156	26.0	5.3	96	2	78	5	97	1
	Bluegill	3	0.5	0.5	67		0		121	1
	Channel Catfish	2	0.2	0.2	100		0		94	
	Walleye	6	1.0	0.9	100		67		78	1

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 gill net (1/2 inch)*	Black Bullhead					0.5						0.50
	Black Crappie					1.0						1.00
	Walleye					2.5						2.50
AFS std frame net	Black Bullhead			3.3								3.30
	Black Crappie			10.7								10.70
	Bluegill			4.5								4.50
	Common Carp			0.1								0.10
	Gizzard Shad			49.4								49.40
	Walleye			0.2								0.20
	White Sucker			0.9								0.90
AFS std gill net	Black Bullhead			1.3	0.5	0.0	12.8	2.0			0.0	2.77
	Black Crappie			3.8	2.0	0.0	0.5	2.0			1.8	1.68
	Channel Catfish			2.0	2.8	0.5	4.5	1.8			1.8	2.23
	Common Carp			1.0	0.3	0.3	2.5	3.5			8.0	2.60
	Gizzard Shad			20.3	3.0	0.3	0.5	2.8			3.5	5.07
	Largemouth Bass			0.0	0.0	0.0	0.5	0.8			0.0	0.22
	Walleye			0.8	5.5	1.5	3.3	2.3			8.8	3.70
	Yellow Perch			0.0	2.5	0.0	0.8	0.0			0.8	0.68
boat shocker (day)	Largemouth Bass							79.0	23.8	3.0	23.1	32.23
	Smallmouth Bass							14.0	3.0	2.0	1.0	5.00
	Walleye*							81.0	163.5	69.0	161.4	118.73
boat shocker (night)	Largemouth Bass	40.8	85.0	40.8	20.8	13.0	15.5					35.98
	Smallmouth Bass	9.6	5.0	2.4	7.5	0.0	12.5					6.17
	Walleye*	32.4	105.0	66.0	113.3	55.3	30.0					67.00
frame net (std 3/4 in)	Black Bullhead	82.9	31.2		11.9	10.6	11.3	38.3	2.6	1.7	0.2	21.19
	Black Crappie	48.0	48.9		29.1	62.5	89.3	233.3	62.0	5.8	26.0	67.21
	Bluegill	2.6	5.0		0.8	0.3	0.8	1.5	0.2	0.0	0.5	1.30
	Channel Catfish	0.4	0.6		0.2	1.0	0.3	0.1	0.2	0.2	0.2	0.36
	Common Carp	1.0	0.1		0.0	0.8	0.0	0.5	0.4	1.7	0.0	0.50
	Gizzard Shad	0.0	2.3		9.3	0.0	0.0	0.0	0.0	0.0	0.0	1.29
	Golden Shiner	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
	Northern Pike	0.1	0.0		0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.02
	Smallmouth Bass	0.0	0.0		0.0	0.1	0.0	1.5	0.0	0.0	0.0	0.18

		CPUE										
Gear	Species	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Avg
frame net (std 3/4 in)	Walleye	0.3	0.3		4.6	2.1	2.5	1.4	0.4	3.3	1.0	1.77
	White Sucker	0.4	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.04
	Yellow Perch	0.5	2.0		0.5	0.4	0.0	0.6	0.0	0.0	0.0	0.44
rod and reel	Black Crappie			225.0								225.00
std exp gill net	Black Bullhead	23.0	13.5									18.25
	Black Crappie	3.5	5.0									4.25
	Channel Catfish	0.5	6.5									3.50
	Common Carp	0.5	0.0									0.25
	Gizzard Shad	32.0	25.5									28.75
	Golden Shiner	0.0	0.0									0.00
	Largemouth Bass	1.0	1.5									1.25
	Northern Pike	2.5	0.5									1.50
	Smallmouth Bass	0.5	0.0									0.25
	Walleye	7.5	11.5									9.50
	Yellow Perch	3.0	0.0									1.50

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			6							
		PSD-P			0							
		Wr			88							
	Black Crappie	PSD			93							
		PSD-P			27							
		Wr			96							
	Bluegill	PSD			38							
		PSD-P			0							
		Wr			114							
	Common Carp	PSD			100							
		PSD-P			0							
		Wr			87							
	Gizzard Shad	PSD			2							
		Wr			86							
	Walleye	PSD			100							
		PSD-P			50							
		Wr			78							
AFS std gill net	Black Bullhead	PSD			0	50	0	0	0			
		PSD-P			0	0	0	0	0			
		Wr			74	120		88	79			
	Black Crappie	PSD			7	88		50	88			86
		PSD-P			0	25		50	0			86
		Wr			101	109		104	110			100
	Channel Catfish	PSD			38	0	50	33	71			71
		PSD-P			0	0	0	0	0			14
		Wr			83	94	93	83	81			87
	Common Carp	PSD			25	100	100	30	0			34
		PSD-P			0	0	0	0	0			0
		Wr			82	76	76	83	82			83
	Gizzard Shad	PSD			6	92	100	100	82			100
		Wr			87	104	79	98	98			106
	Largemouth Bass	PSD						0	0			
		PSD-P						0	0			

			Year									
Gear	Species	Index	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
AFS std gill net	Largemouth Bass	Wr						121	104			
	Walleye	PSD			100	18	67	23	33			40
		PSD-P			33	18	0	0	11			3
		Wr			79	97	89	86	88			86
	Yellow Perch	PSD				0		0				67
		PSD-P				0		0				0
		Wr				92		84				88
boat shocker (day)	Largemouth Bass	PSD							22	91	100	26
		PSD-P							4	4	0	13
		Wr							109	107	117	119
	Smallmouth Bass	PSD							0	33	50	100
		PSD-P							0	0	0	0
		Wr							96	104	101	105
	Walleye	PSD							67	54	50	6
		PSD-P							8	15	50	1
		Wr							96	91	91	92
boat shocker (night)	Largemouth Bass	PSD	32	11	21	100	13	0				
		PSD-P	3	5	12	20	13	0				
		Wr	105	101	108	117	106	115				
	Smallmouth Bass	PSD	13	0	0	17	0	4				
		PSD-P	0	0	0	17	0	0				
		Wr	92	96	101	109		108				
	Walleye	PSD	100	74	67	38	36	19				
		PSD-P	26	22	21	12	10	8				
		Wr	98	90	92	95	96	93				
frame net (std 3/4 in)	Black Bullhead	PSD	2	18		13	75	13	2	0	20	100
		PSD-P	0	0		0	0	0	0	0	0	100
		Wr	76	78		80	92	85	67	84	93	84
	Black Crappie	PSD	80	91		29	67	29	59	67	80	96
		PSD-P	8	25		2	10	3	30	22	43	78
		Wr	91	97		92	98	98	98	101	102	97
	Bluegill	PSD	67	36		13	33	20	58	0		67
		PSD-P	0	0		0	0	0	0	0		0
		Wr	106	99		103	110	112	106	115		121
	Channel Catfish	PSD	33	33		50	20	0	0	0	0	100
		PSD-P	0	0		0	0	0	0	0	0	0

			Year									
Gear	Species	Index	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
frame net (std 3/4 in)	Channel Catfish	Wr	100	105		104	91	94	88	89	91	94
	Common Carp	PSD	75	0		0	100	0	0	50	10	
		PSD-P	13	0		0	0	0	0	0	0	
		Wr	81	81			81			87	87	
	Gizzard Shad	PSD	0	0		0						
		Wr				75						
	Smallmouth Bass	PSD					100		0			
		PSD-P					0		0			
		Wr					113		100			
	Walleye	PSD	50	100		89	57	27	45	50	65	100
		PSD-P	50	33		43	29	13	27	0	5	67
		Wr	107	94		86	93	87	91	89	84	78
	Yellow Perch	PSD	0	5		0	75		0			
		PSD-P	0	0		0	0		0			
		Wr	79	69		97	78		84			
rod and reel	Black Crappie	PSD			96							
		PSD-P			22							
std exp gill net	Black Bullhead	PSD	11	0								
		PSD-P	0	0								
		Wr	88	81								
	Black Crappie	PSD	86	60								
		PSD-P	29	20								
		Wr	92	96								
	Channel Catfish	PSD	100	62								
		PSD-P	0	8								
		Wr	90	85								
	Common Carp	PSD	100									
		PSD-P	0									
		Wr	80									
	Gizzard Shad	PSD	13	8								
		Wr	90									
	Largemouth Bass	PSD	0	0								
		PSD-P	0	0								
		Wr	96	97								
	Smallmouth Bass	PSD	0									
		PSD-P	0									

			Year									
Gear	Species	Index	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
std exp gill net	Smallmouth Bass	Wr	75									
	Walleye	PSD	87	87								
		PSD-P	20	43								
		Wr	89	90								
	Yellow Perch	PSD	0									
		PSD-P	0									
		Wr	77									

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	784		131 (26)	212 (171)	216 (527)	252 (55)	252 (5)				

Species: Largemouth Bass

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2016	172	183 (8)	240 (146)	332 (8)	379 (4)	385 (2)	455 (2)	426 (2)			
2015	100	200 (78)	301 (12)	336 (10)							

Species: Walleye

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2020	13		299 (10)	390 (1)	438 (2)						
2019	5	202 (1)	362 (1)	405 (2)			502 (1)				
2018	21	276 (6)	345 (12)			565 (3)					
2016	42		342 (6)	500 (25)	511 (5)	565 (4)			596 (2)		
2015	30	276 (2)	409 (18)		535 (2)		496 (2)	531 (6)			

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).

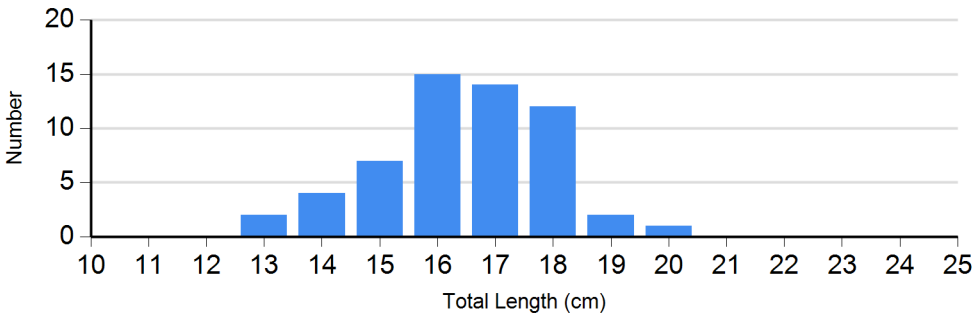
		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Black Bullhead Gill Net	2020	51	88 (1.3)	0		0		0	
	2021	8	79 (3.8)	0		0		0	
Black Crappie Frame Net	2020	382	107 (0.6)	136	89 (0.5)	18	83 (1.0)	0	
	2021	771	100 (0.4)	542	97 (0.6)	533	92 (0.9)	20	86
	2022	103	100 (0.7)	139	101 (0.9)	67	99 (2.7)	1	
	2023	7	112 (3.8)	13	103 (2.6)	15	97 (1.4)	0	
	2024	6	119 (6.6)	29	97 (0.9)	116	95 (0.4)	5	92 (1.5)
Bluegill Frame Net	2020	4	112 (6.9)	1	114	0		0	
	2021	5	111 (4.7)	7	102 (5.1)	0		0	
	2022	1	115	0		0		0	
	2024	1		2	121 (1.0)	0		0	
Channel Catfish Gill Net	2020	12	85 (1.5)	6	80 (1.7)	0		0	
	2021	2	87 (2.5)	5	79 (2.6)	0		0	
	2024	2	81 (1.7)	4	91 (3.2)	1	82	0	
Common Carp Gill Net	2020	7	84 (1.7)	3	80 (1.0)	0		0	
	2021	14	82 (1.1)	0		0		0	
	2024	21	85 (1.1)	11	75 (0.4)	0		0	
Largemouth Bass Electro Fishing	2020	31	115 (1.6)	0		0		0	
	2021	62	109 (0.7)	14	108 (1.3)	3	115 (1.6)	0	
	2022	2	109 (10.1)	20	107 (1.6)	1	105	0	
	2023	0		3	117 (1.1)	0		0	
	2024	17	126 (1.7)	3	102 (2.7)	3	98 (6.5)	0	

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Smallmouth Bass Electro Fishing	2020	24	108 (1.5)	1	94	0		0	
	2021	14	96 (1.5)	0		0		0	
	2022	2	106 (3.4)	1	99	0		0	
	2023	1	100	1	102	0		0	
	2024	0		1	105	0		0	
Walleye Gill Net	2020	10	88 (1.1)	3	81 (2.3)	0		0	
	2021	6	88 (2.4)	2	87 (2.0)	1	92	0	
	2024	21	88 (0.8)	13	83 (1.4)	1	77	0	
Yellow Perch Gill Net	2020	3	84 (3.1)	0		0		0	
	2024	1	84	2	90 (2.9)	0		0	

Length Frequency Distribution

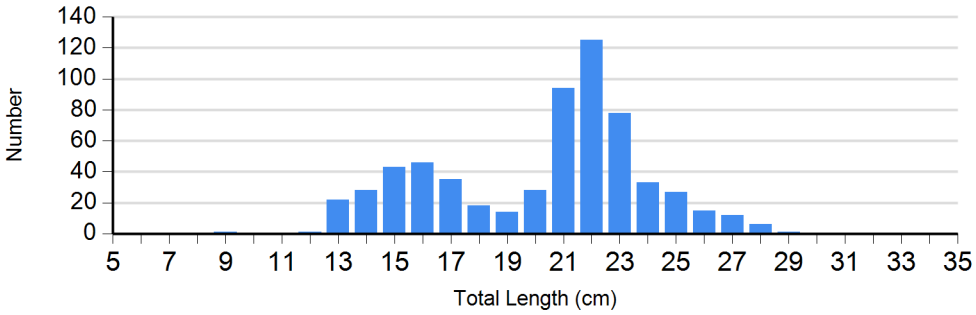
Length frequency histogram of species sampled by year.

Species: Black Bullhead
Gear: AFS std gill net

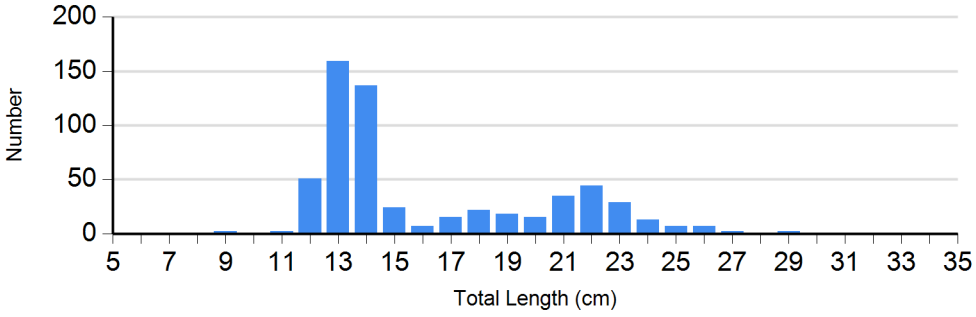


2020

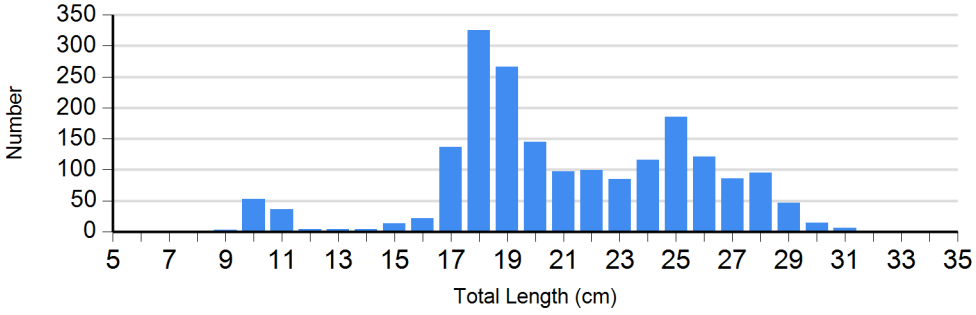
Species: Black Crappie
Gear: frame net (std 3/4 in)



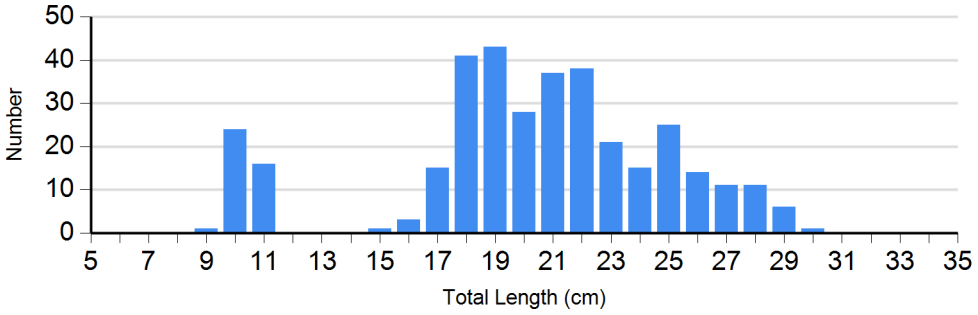
2019



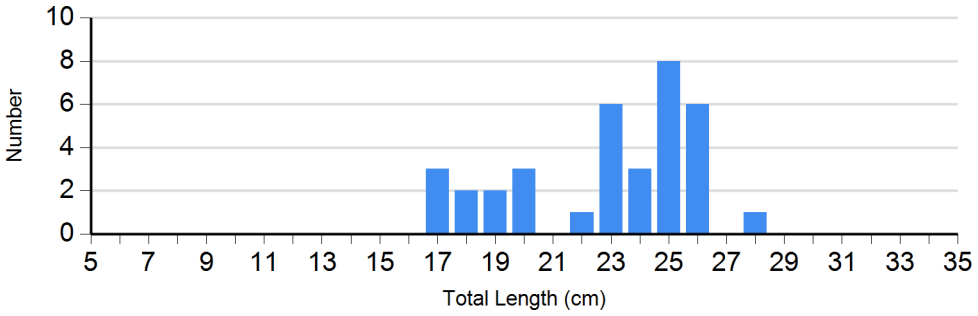
2020



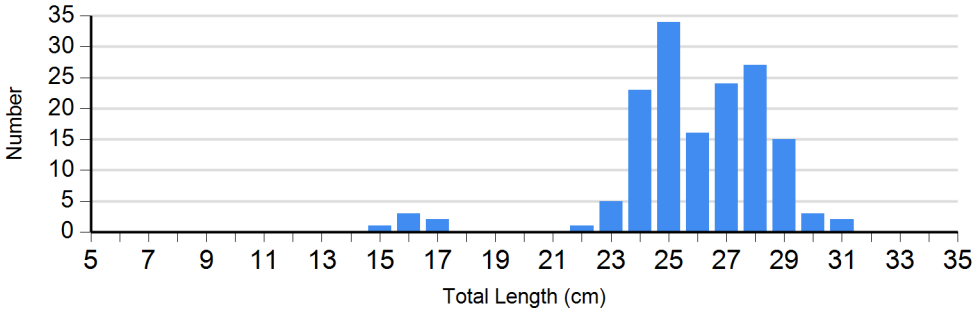
2021



2022

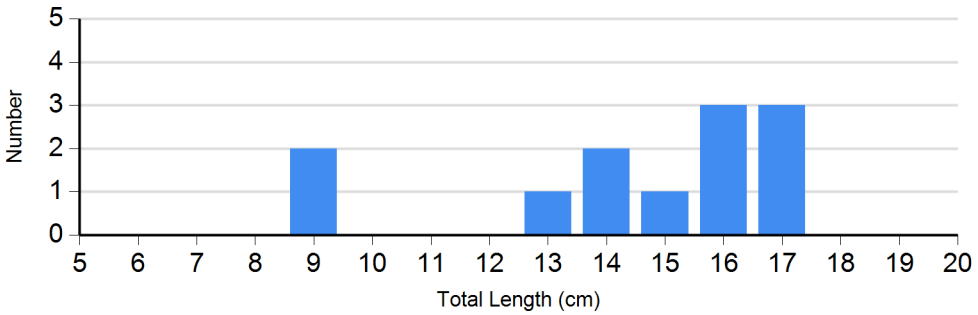


2023



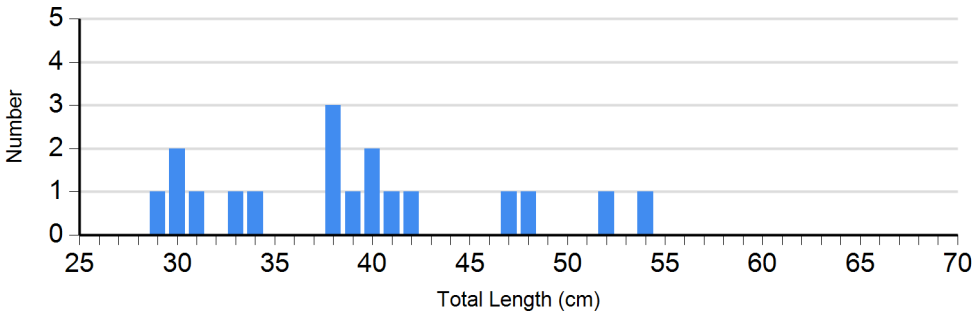
2024

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



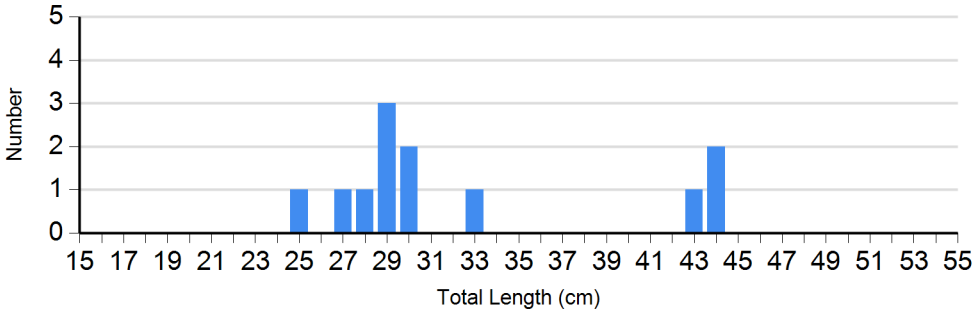
2021

Species: Channel Catfish
Gear: AFS std gill net

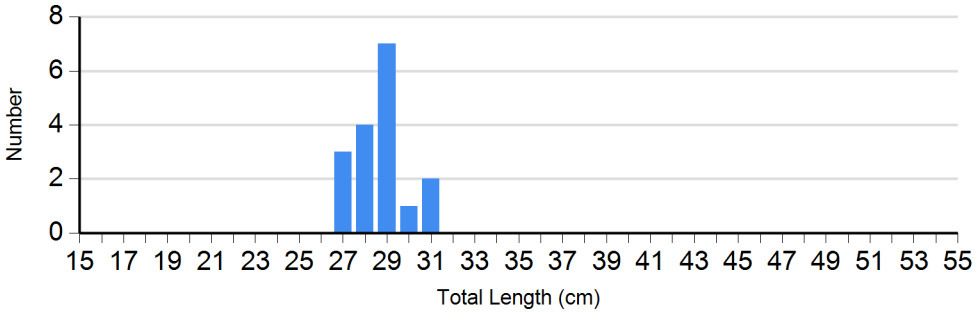


2020

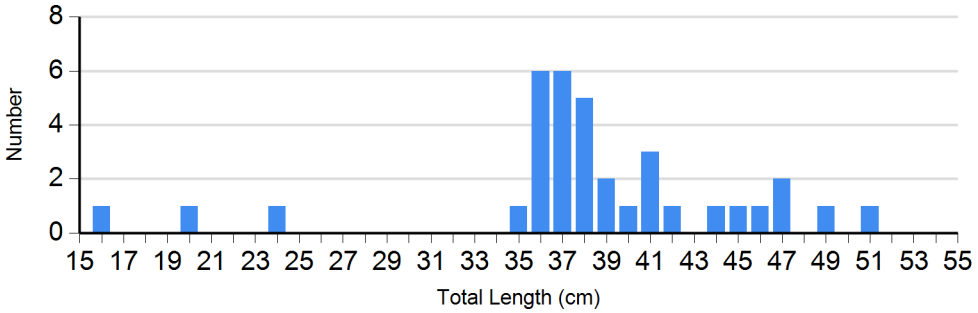
Species: Common Carp
Gear: AFS std gill net



2020

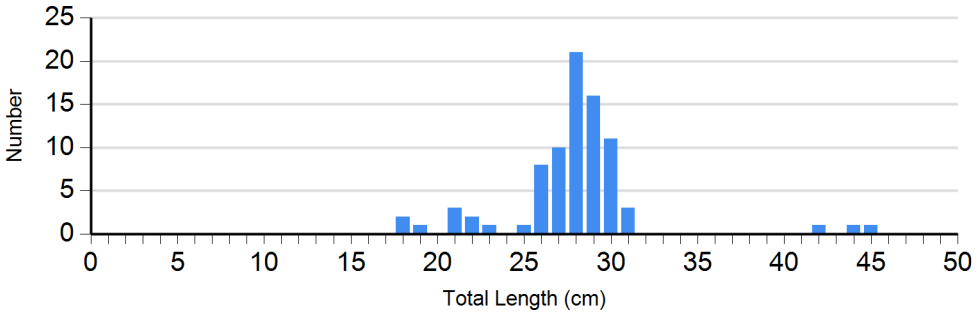


2021

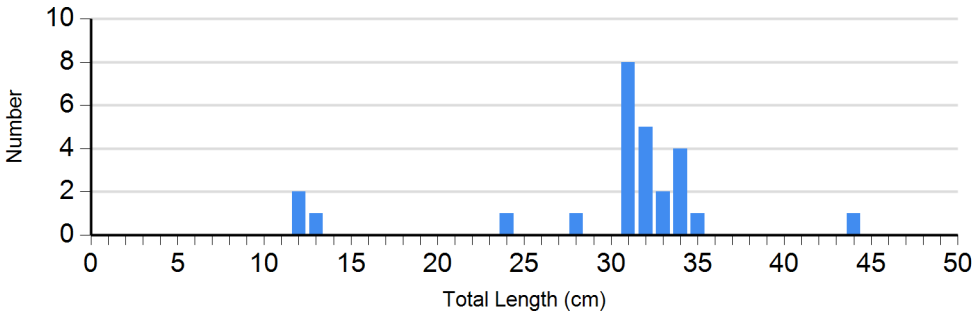


2024

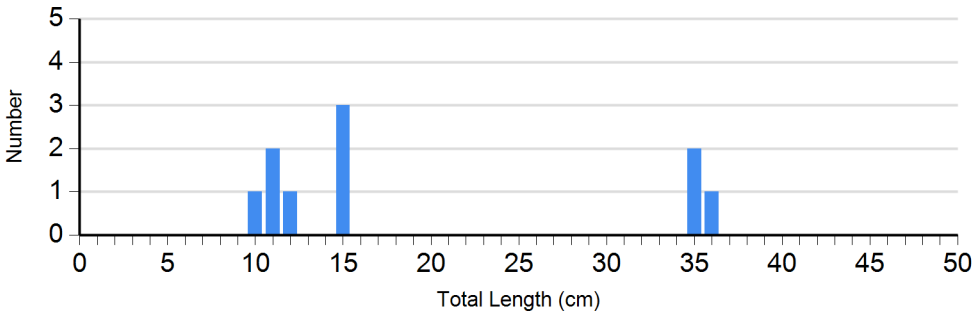
Species: Largemouth Bass
Gear: boat shocker (day)



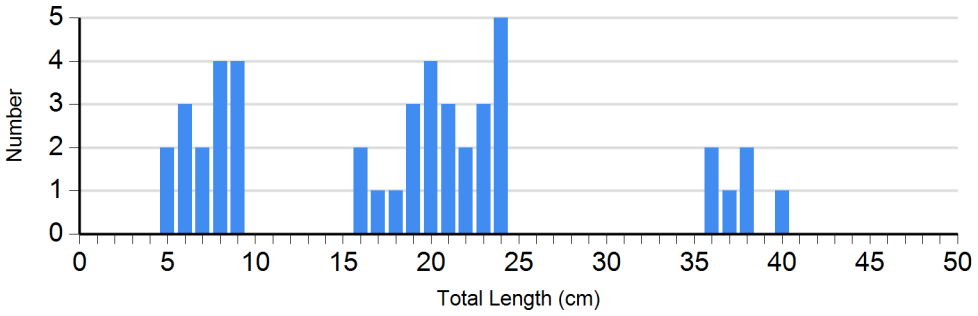
2021



2022

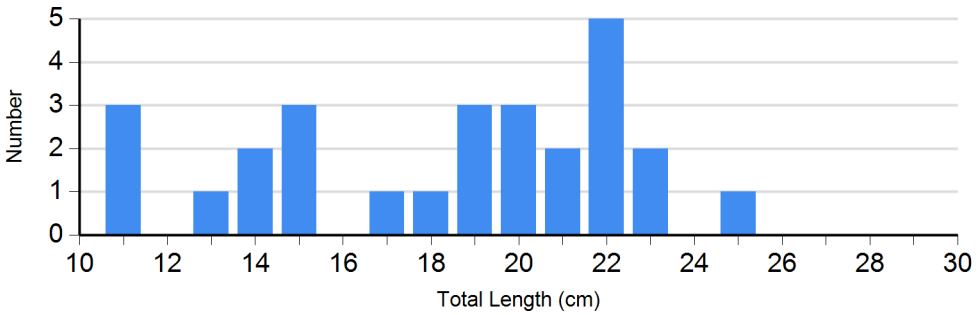


2023

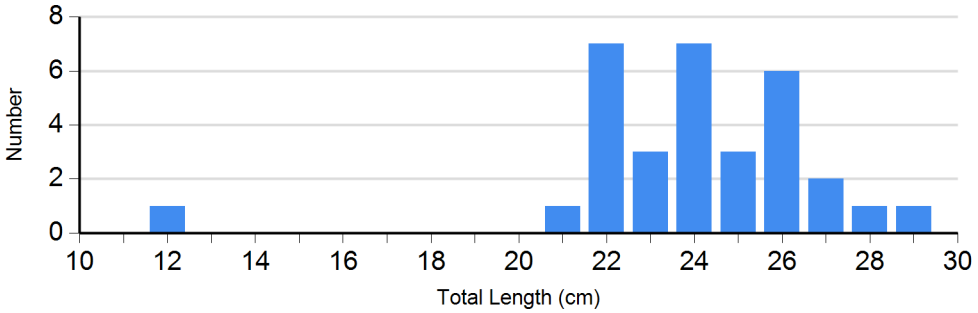


2024

Species: Largemouth Bass
Gear: boat shocker (night)

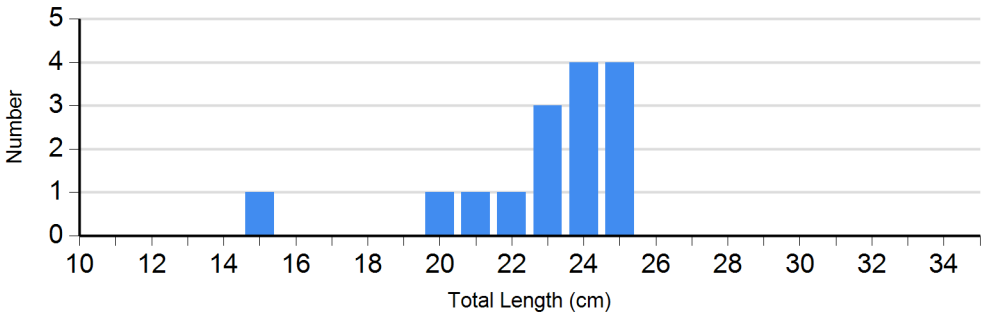


2019



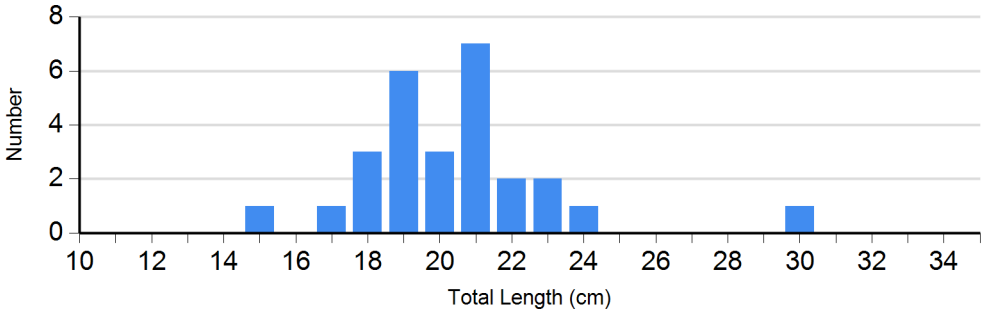
2020

Species: Smallmouth Bass
Gear: boat shocker (day)



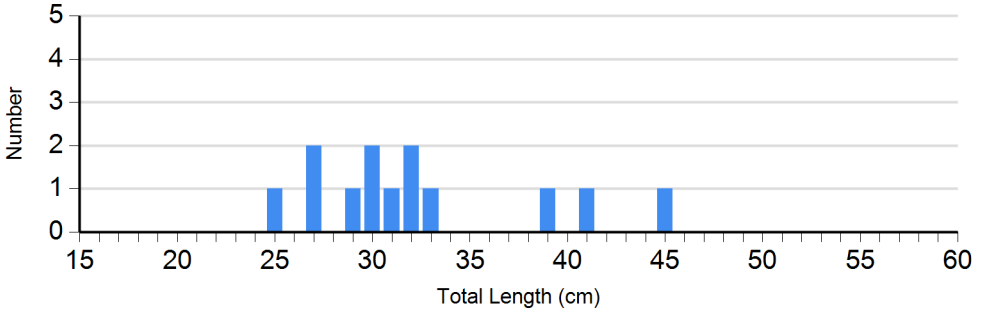
2021

Species: Smallmouth Bass
Gear: boat shocker (night)

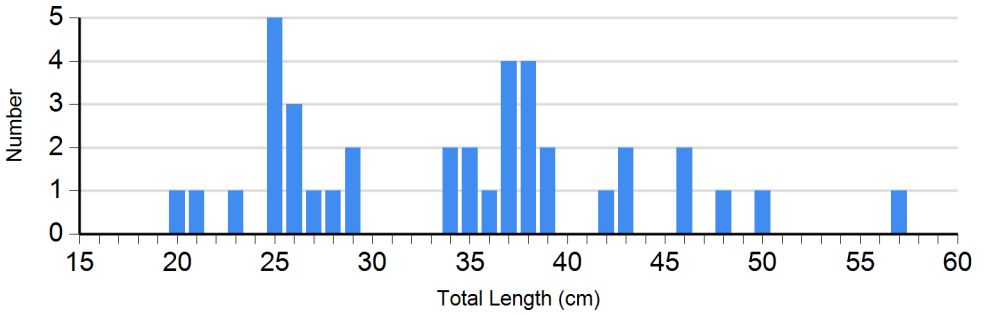


2020

Species: Walleye
Gear: AFS std gill net



2020

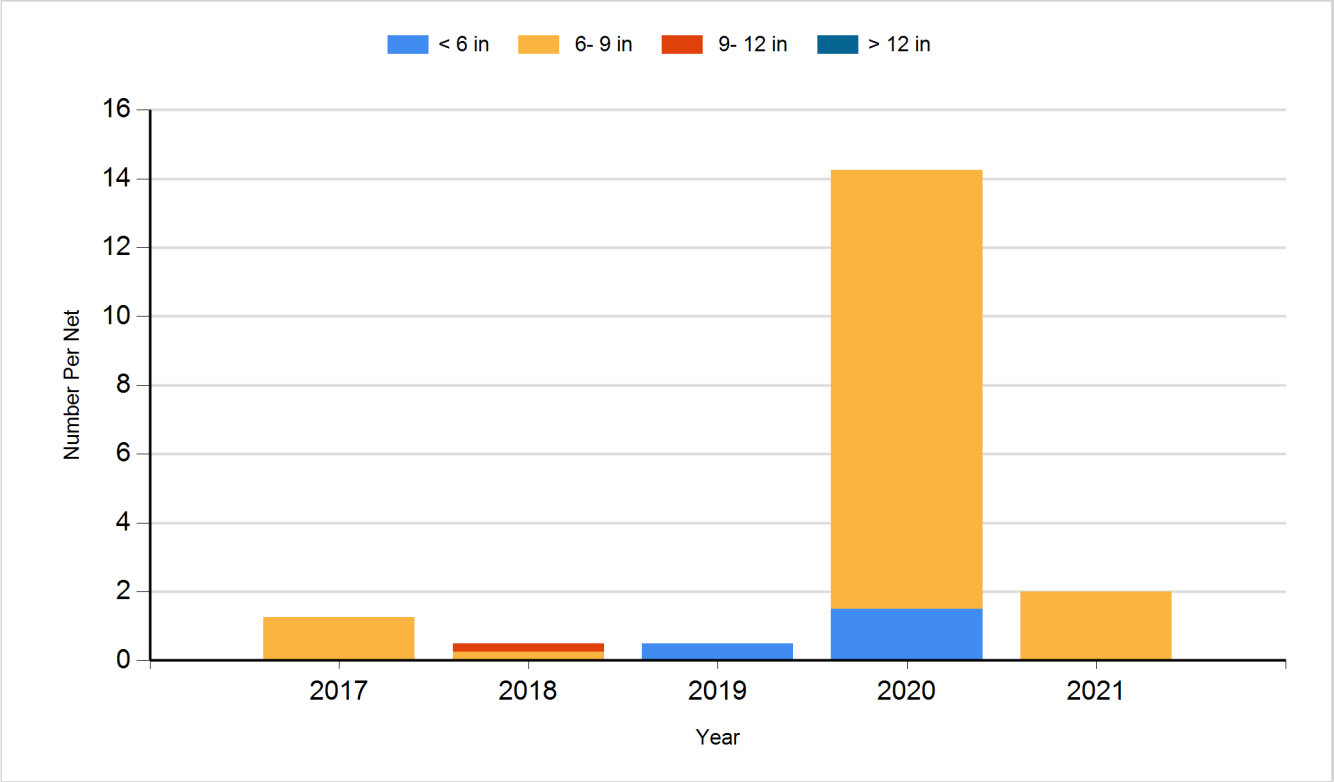


2024

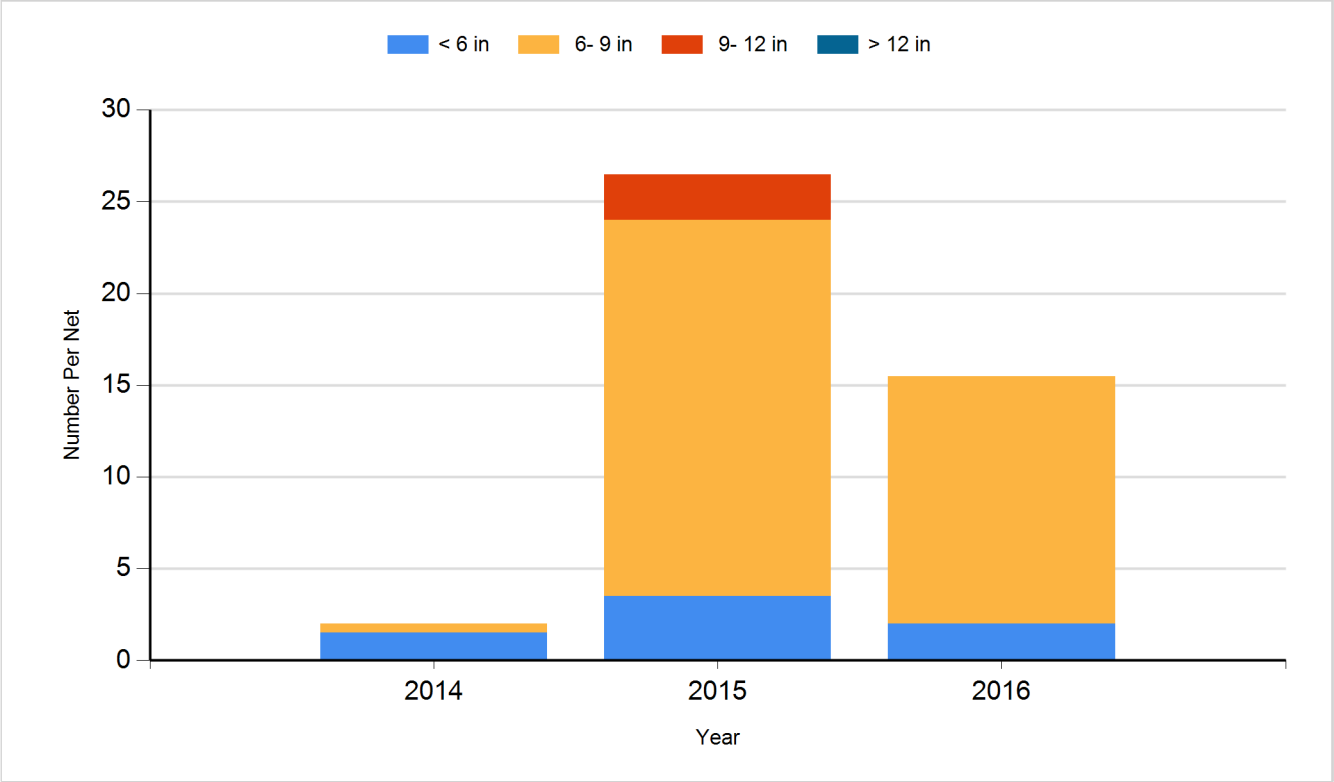
Historic Fish Sizes and Relative Abundance

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

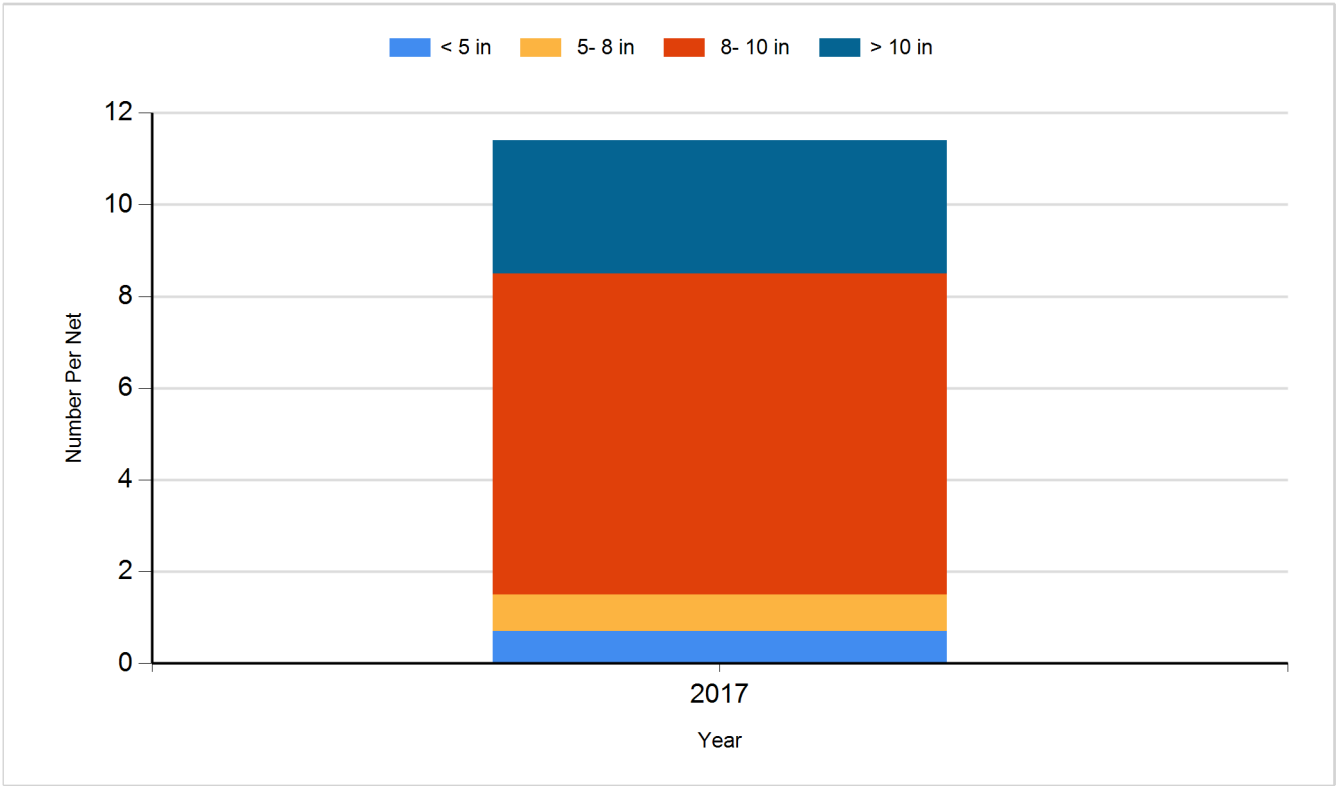
Species: Black Bullhead
Gear: AFS std gill net



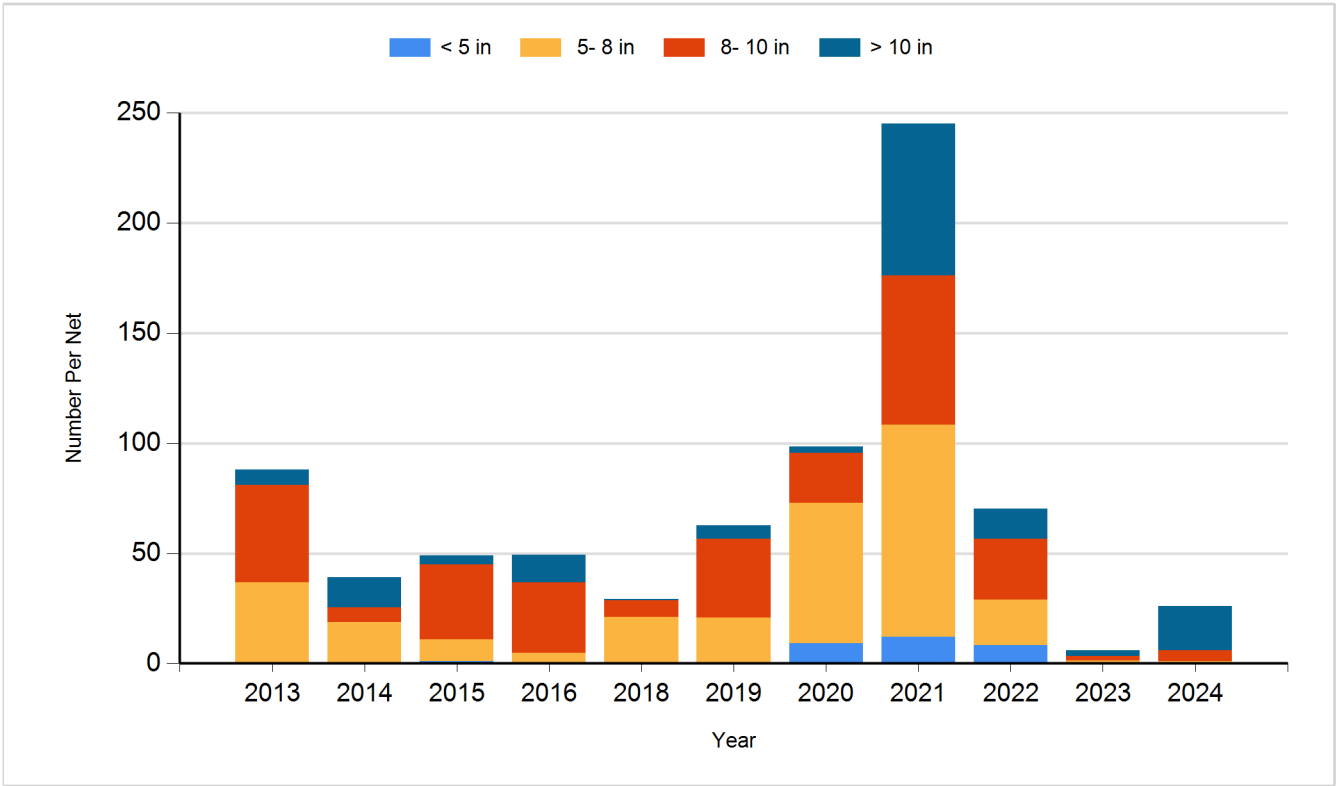
Species: Black Bullhead
Gear: std exp gill net



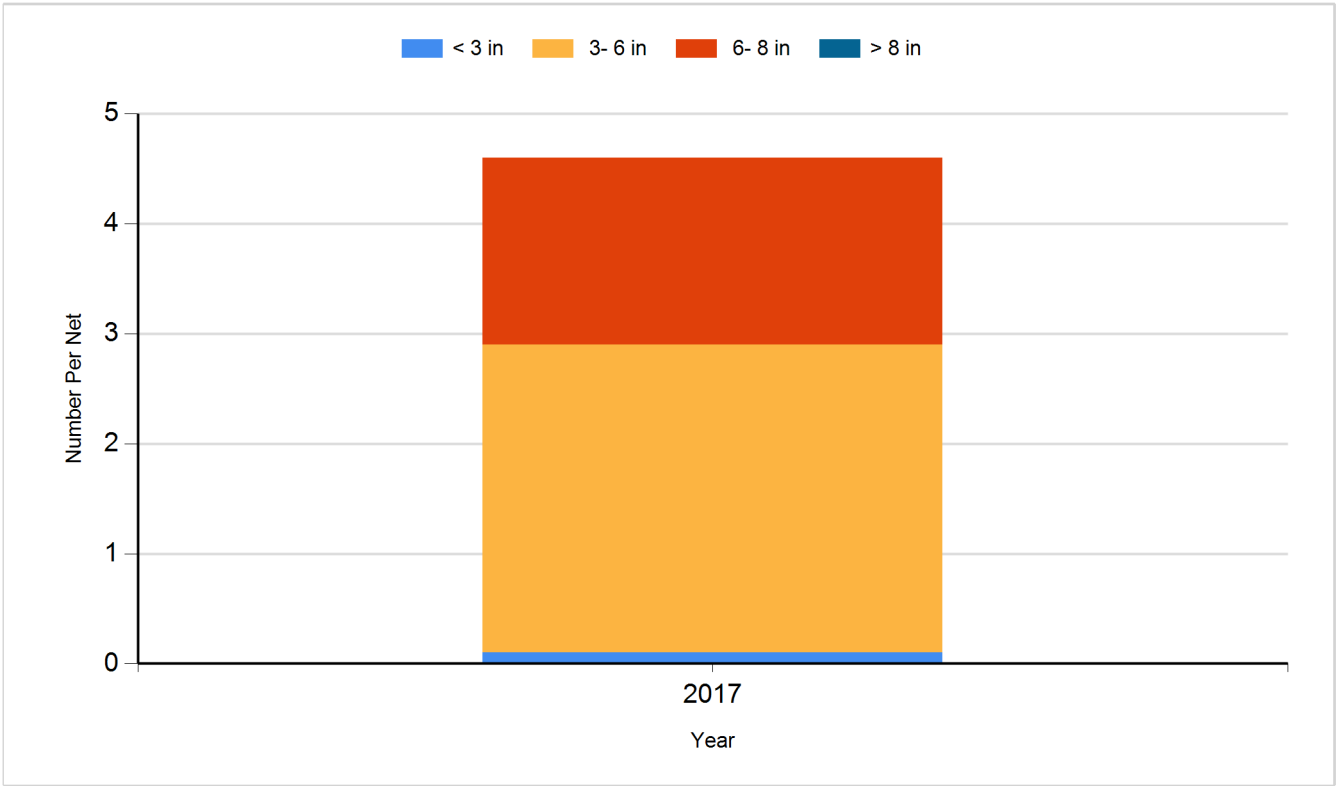
Species: Black Crappie
Gear: AFS std frame net



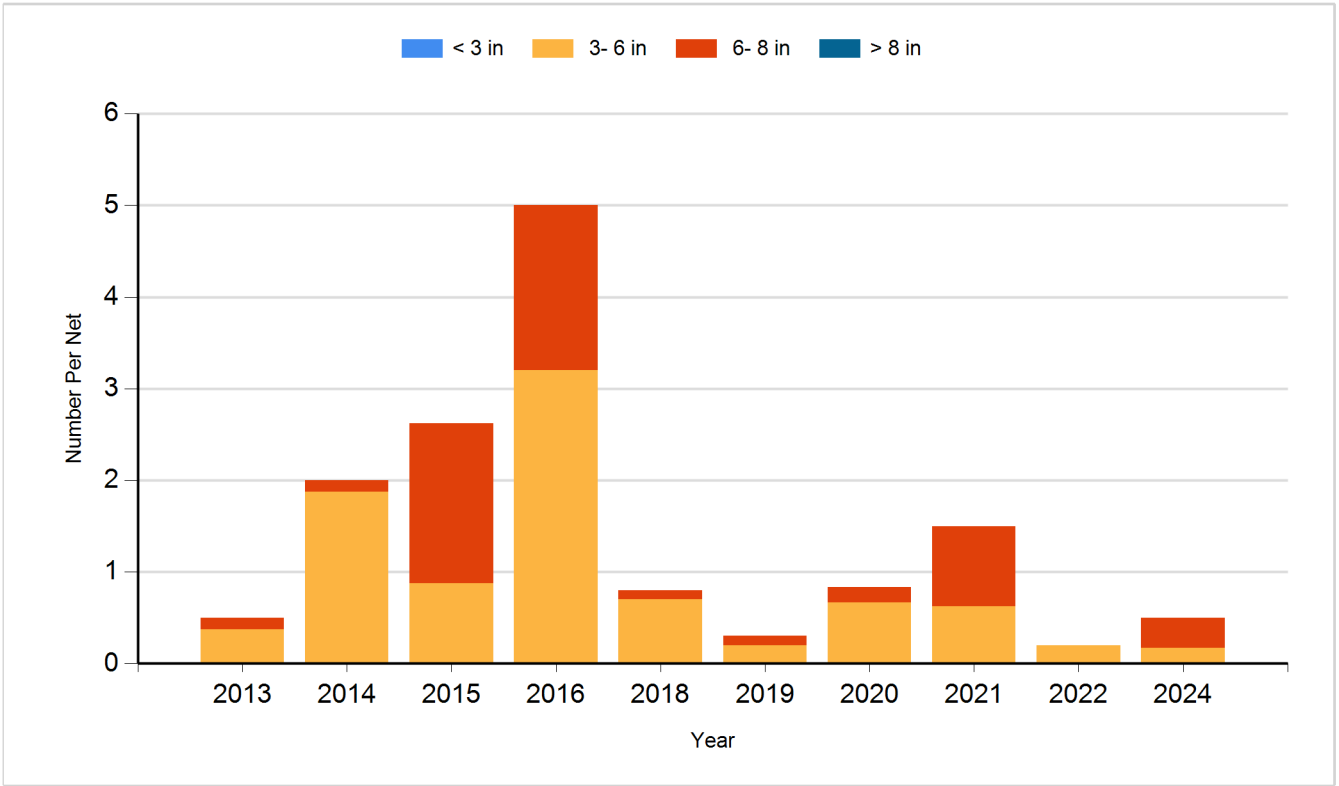
Species: Black Crappie
Gear: frame net (std 3/4 in)



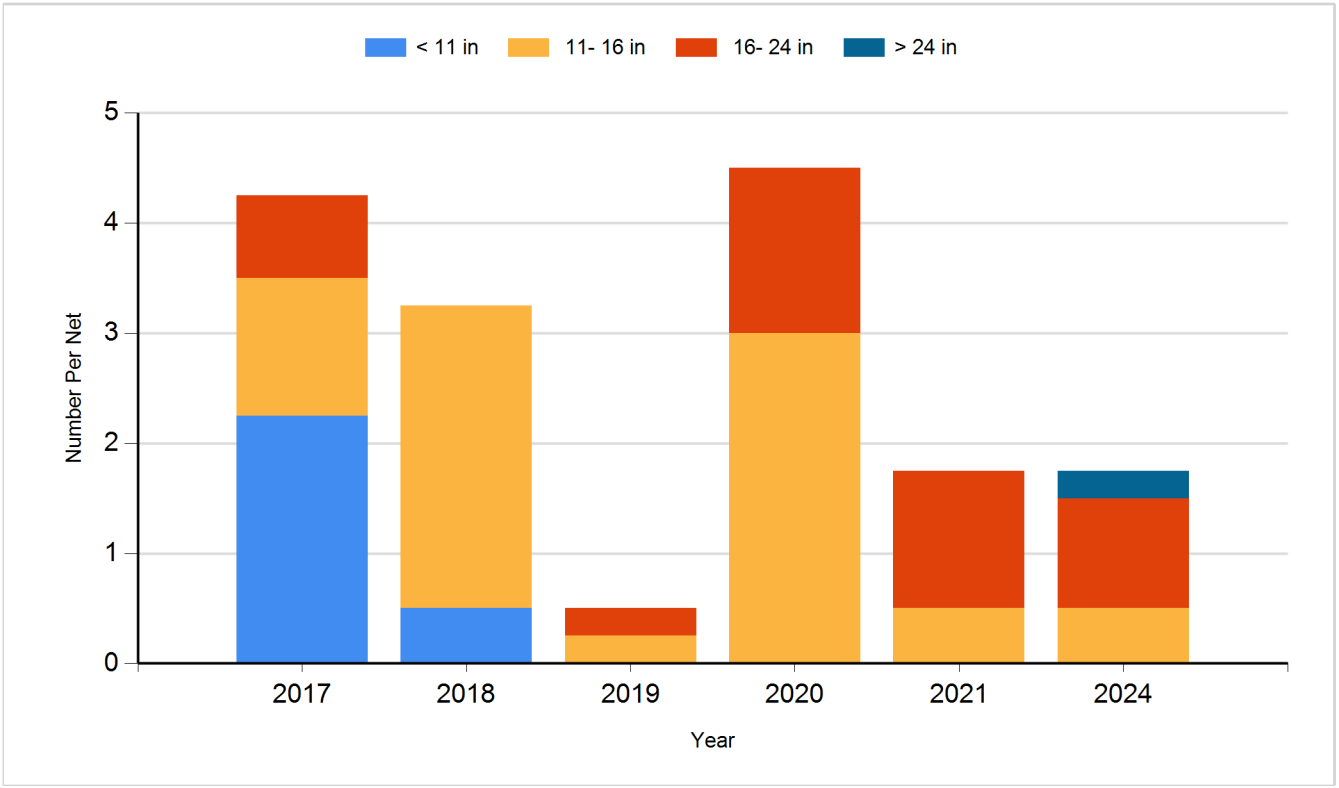
Species: Bluegill
Gear: AFS std frame net



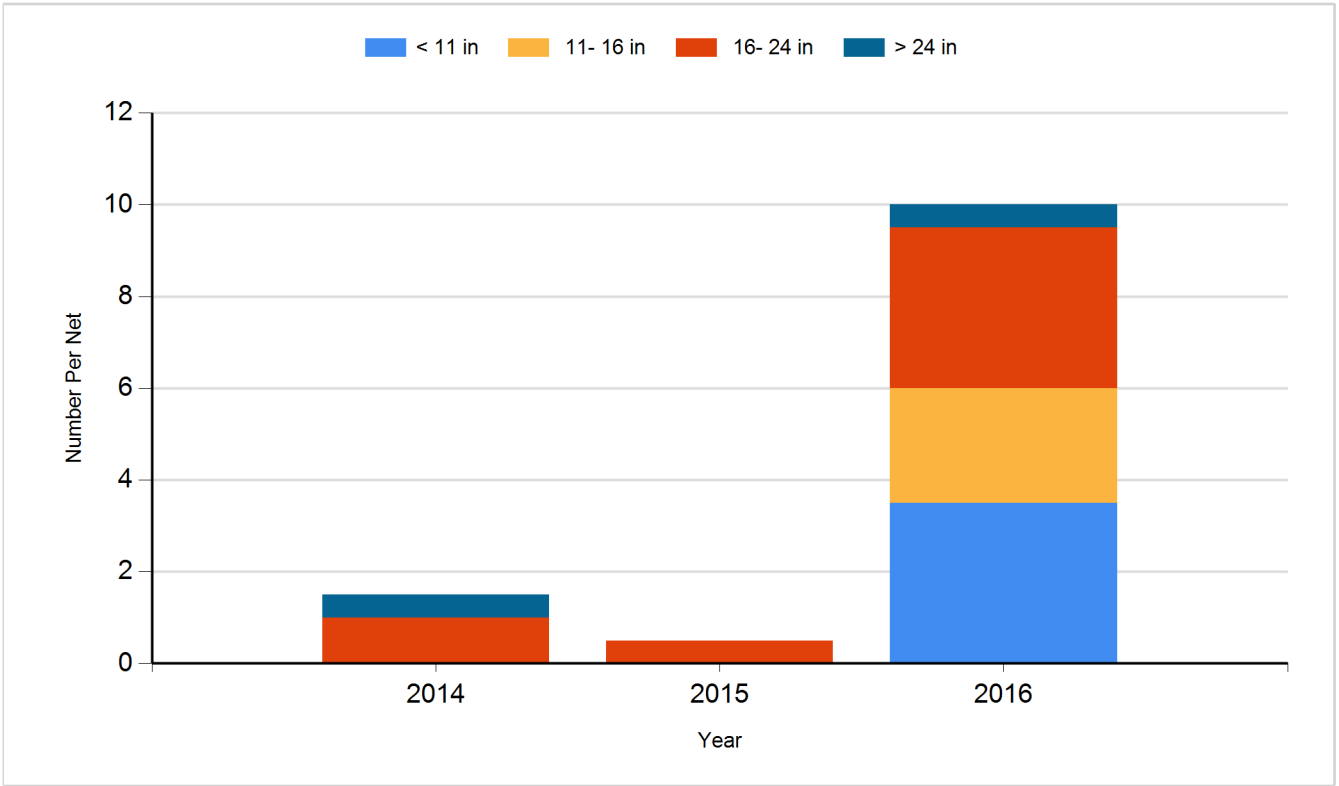
Species: Bluegill
Gear: frame net (std 3/4 in)



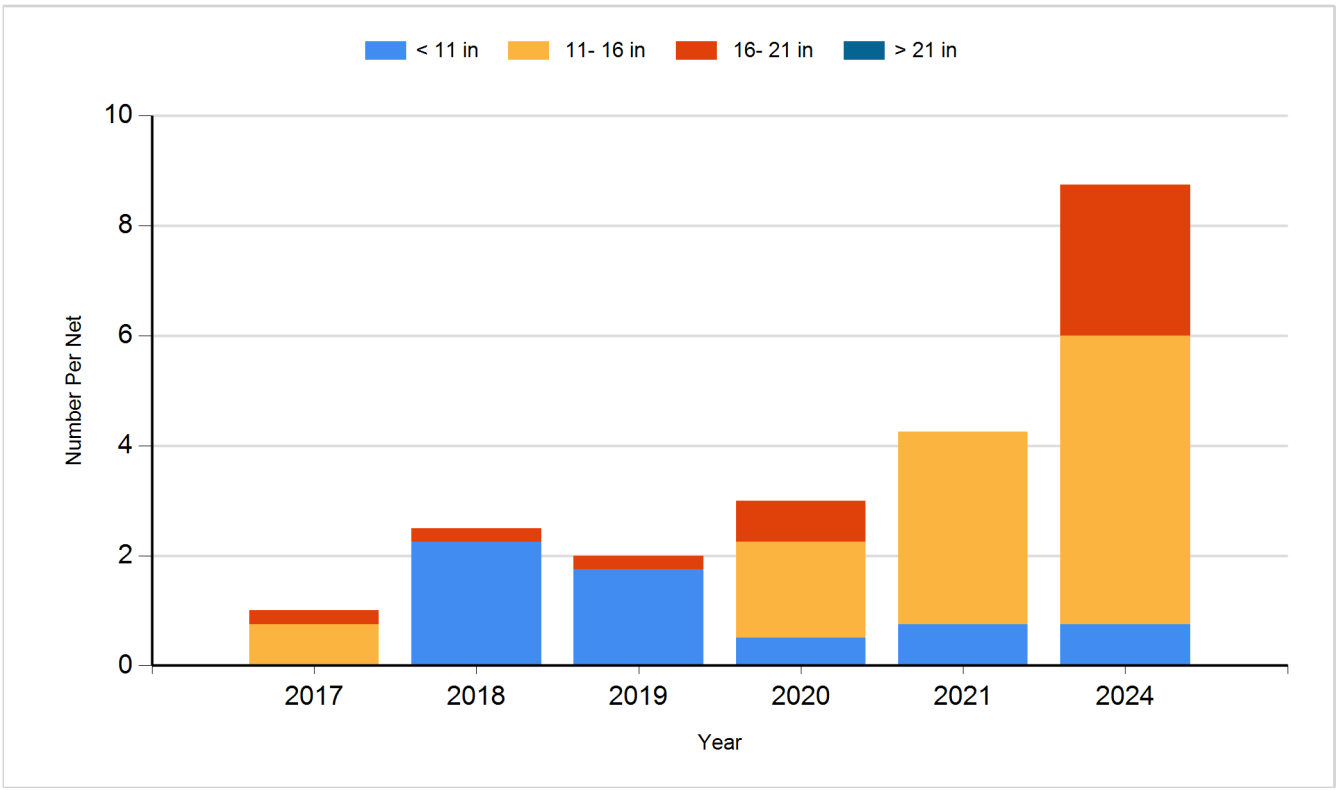
Species: Channel Catfish
Gear: AFS std gill net



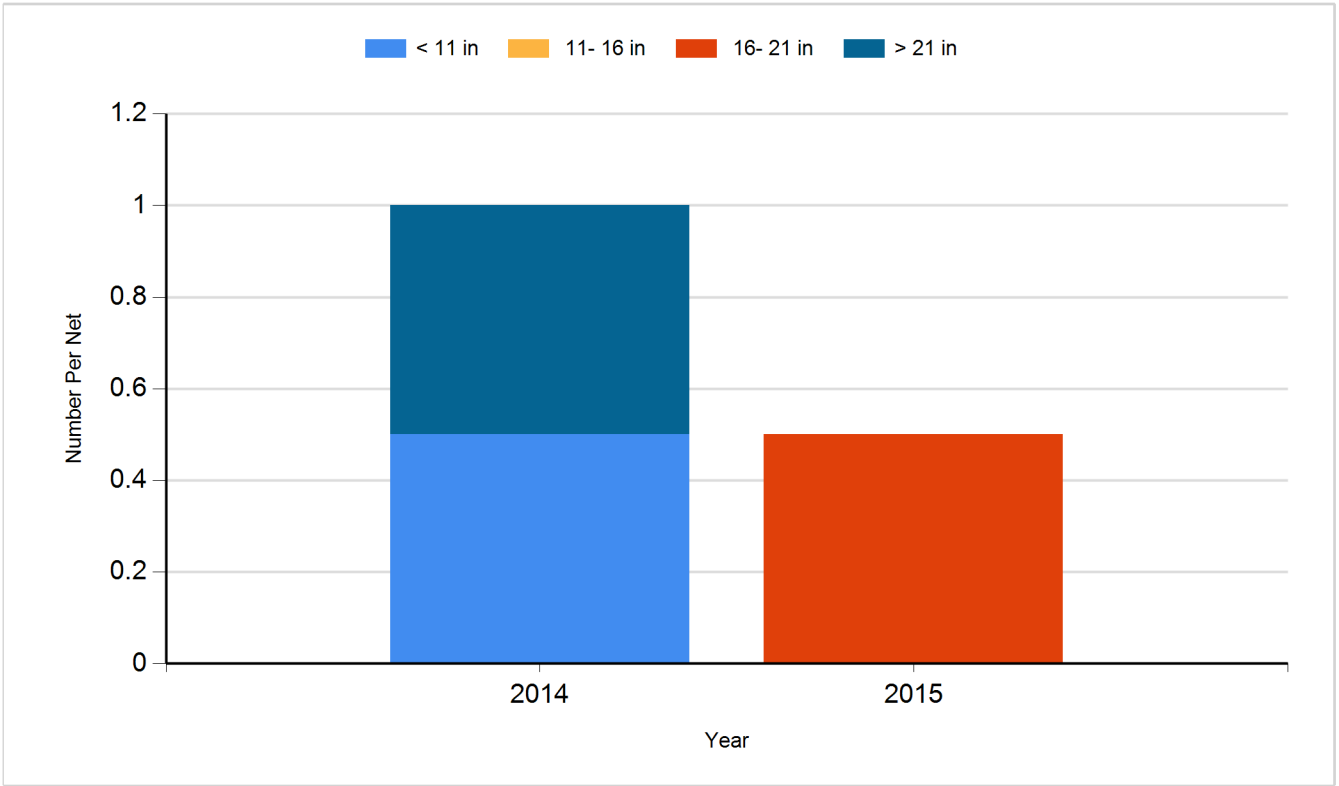
Species: Channel Catfish
Gear: std exp gill net



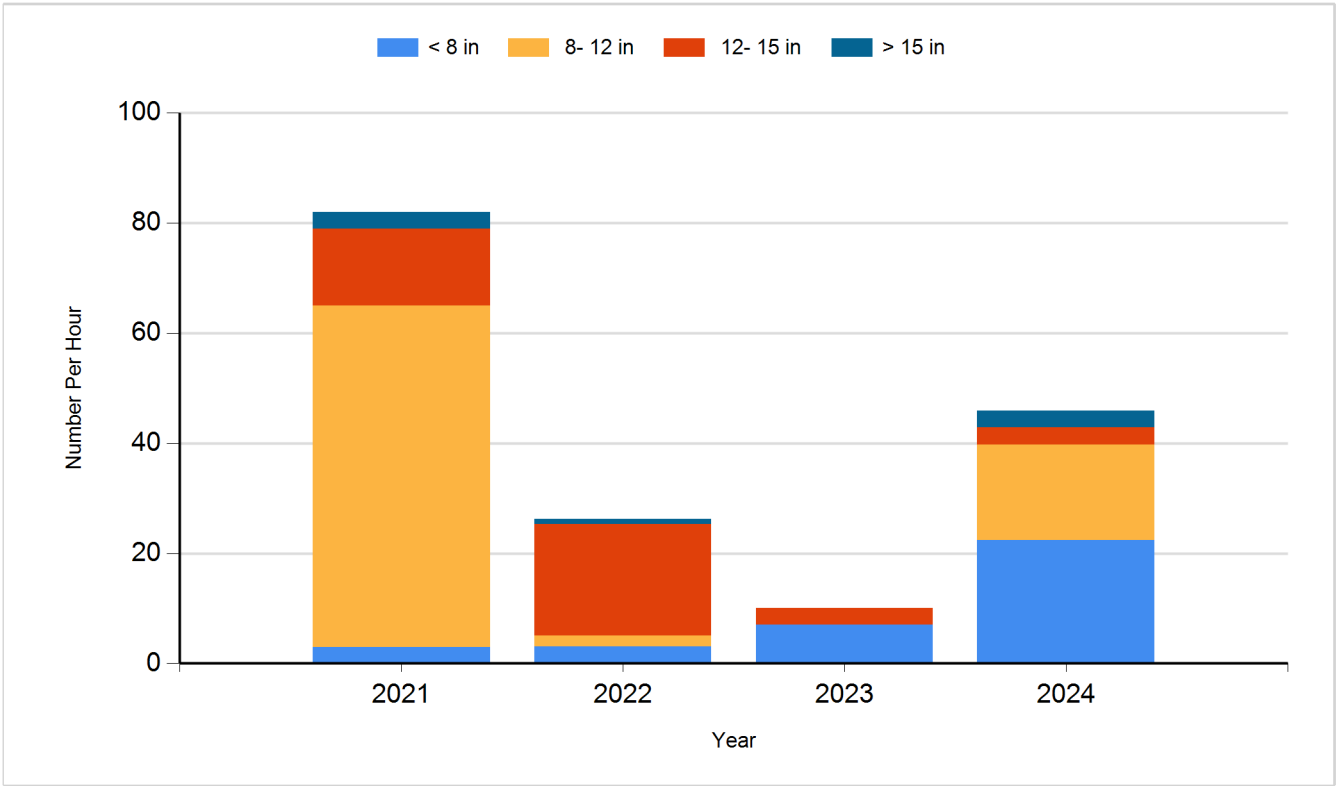
Species: Common Carp
Gear: AFS std gill net



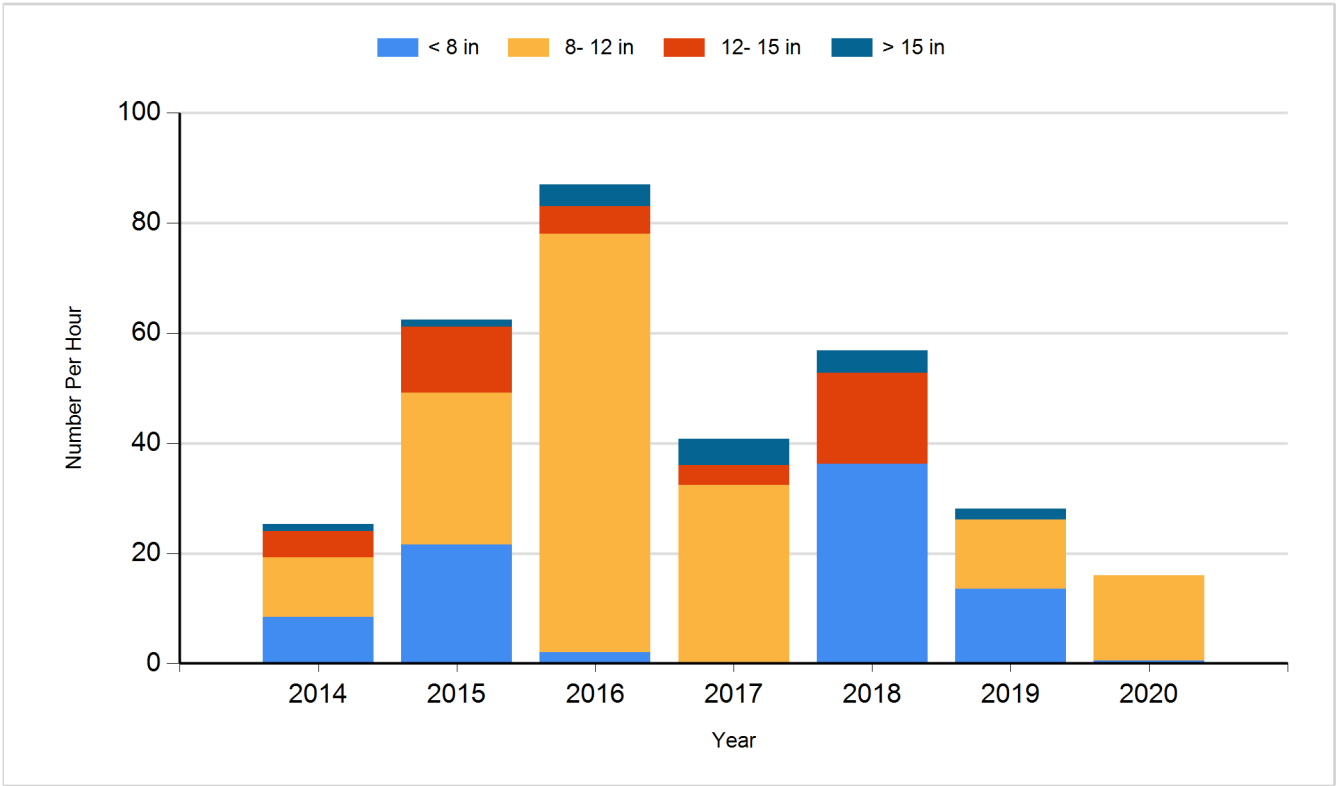
Species: Common Carp
Gear: std exp gill net



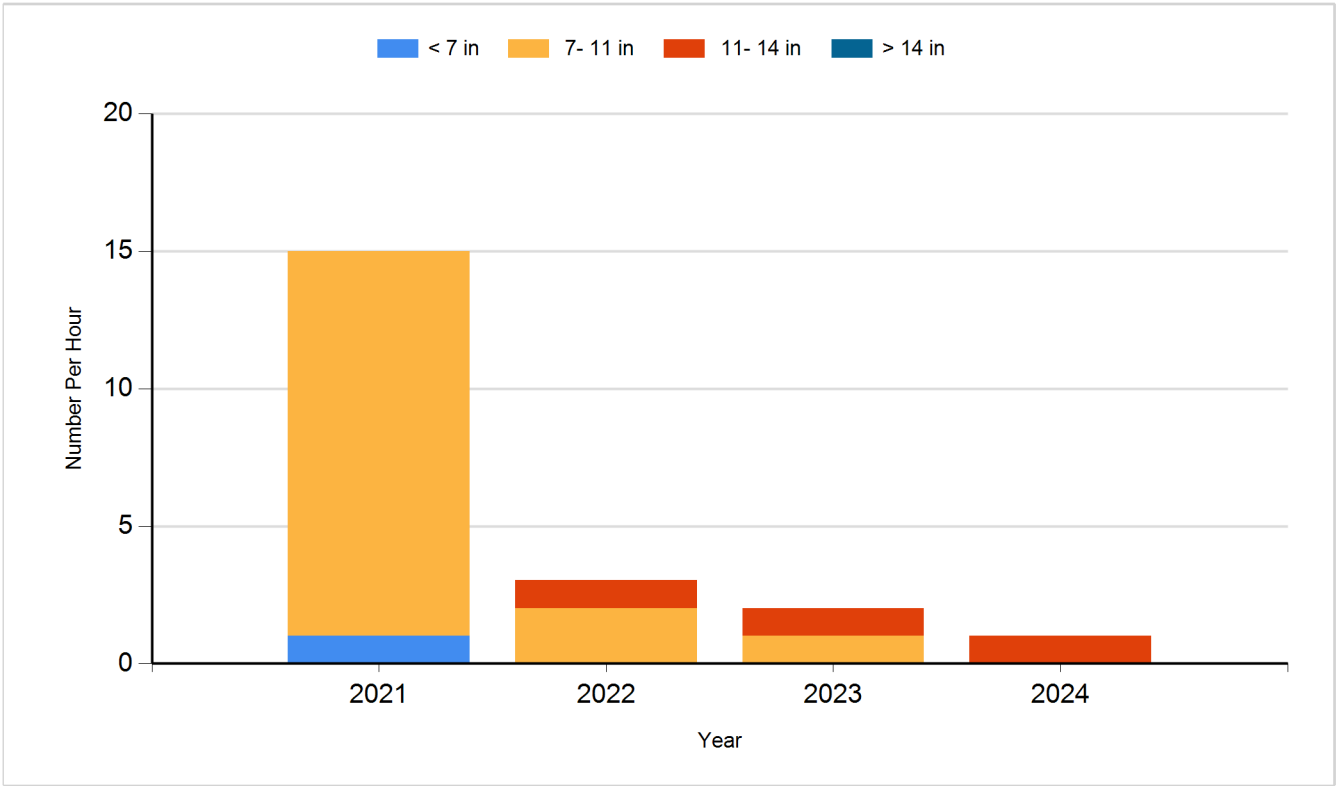
Species: Largemouth Bass
Gear: boat shocker (day)



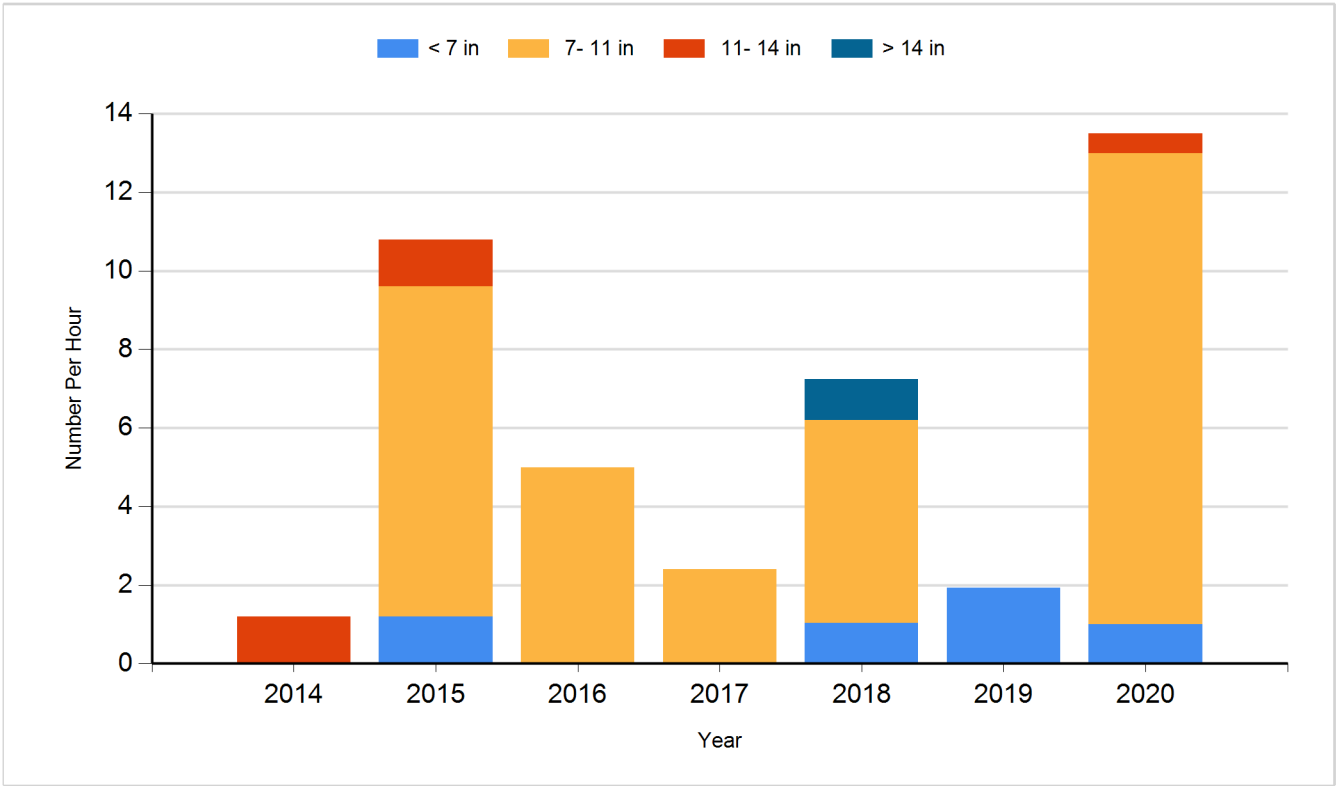
Species: Largemouth Bass
Gear: boat shocker (night)



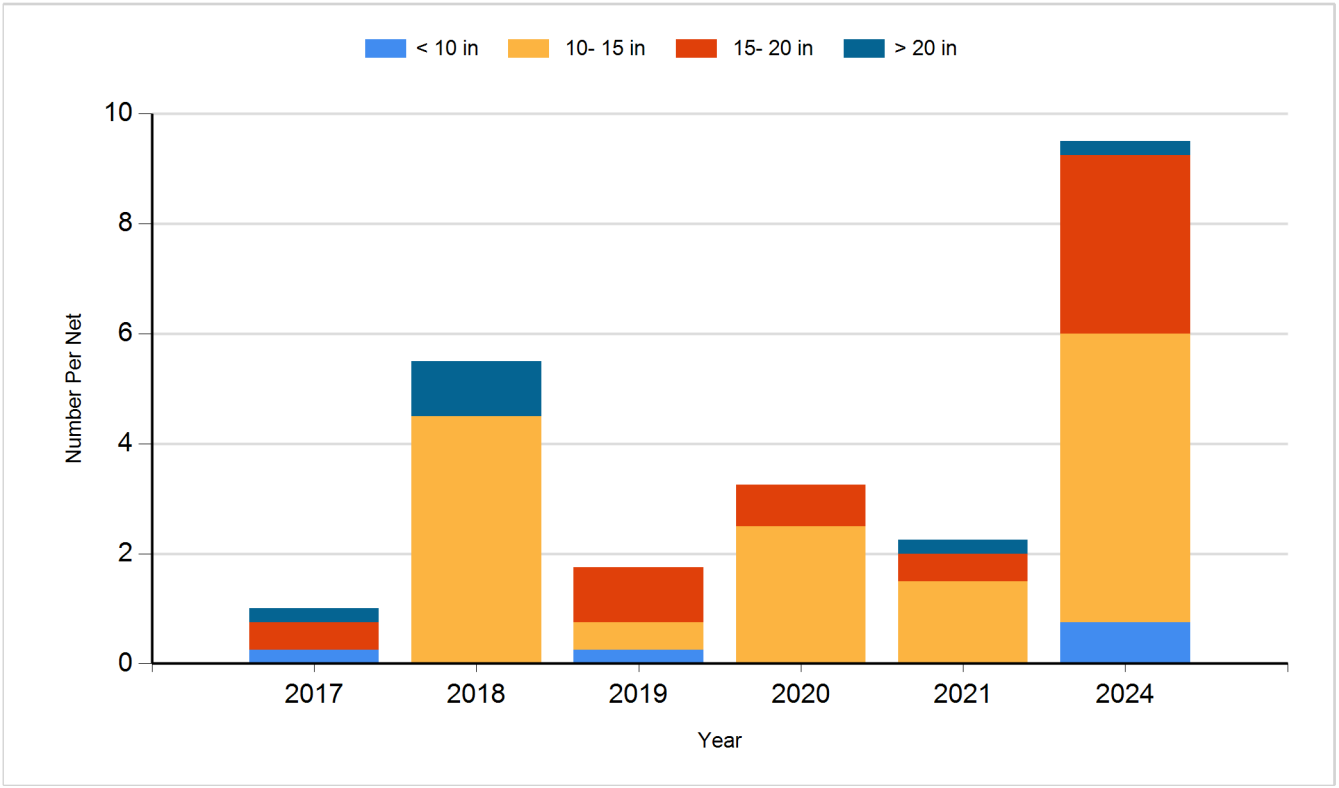
Species: Smallmouth Bass
Gear: boat shocker (day)



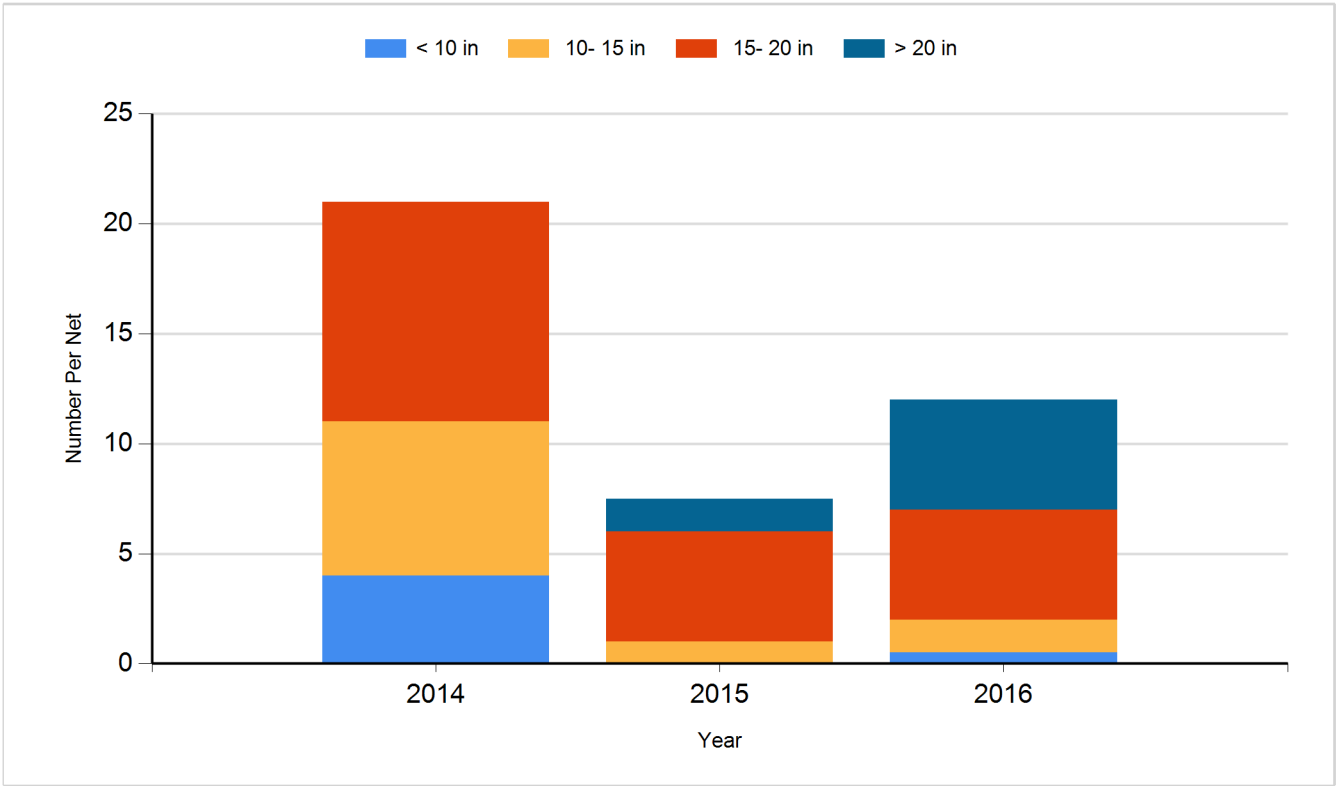
Species: Smallmouth Bass
Gear: boat shocker (night)



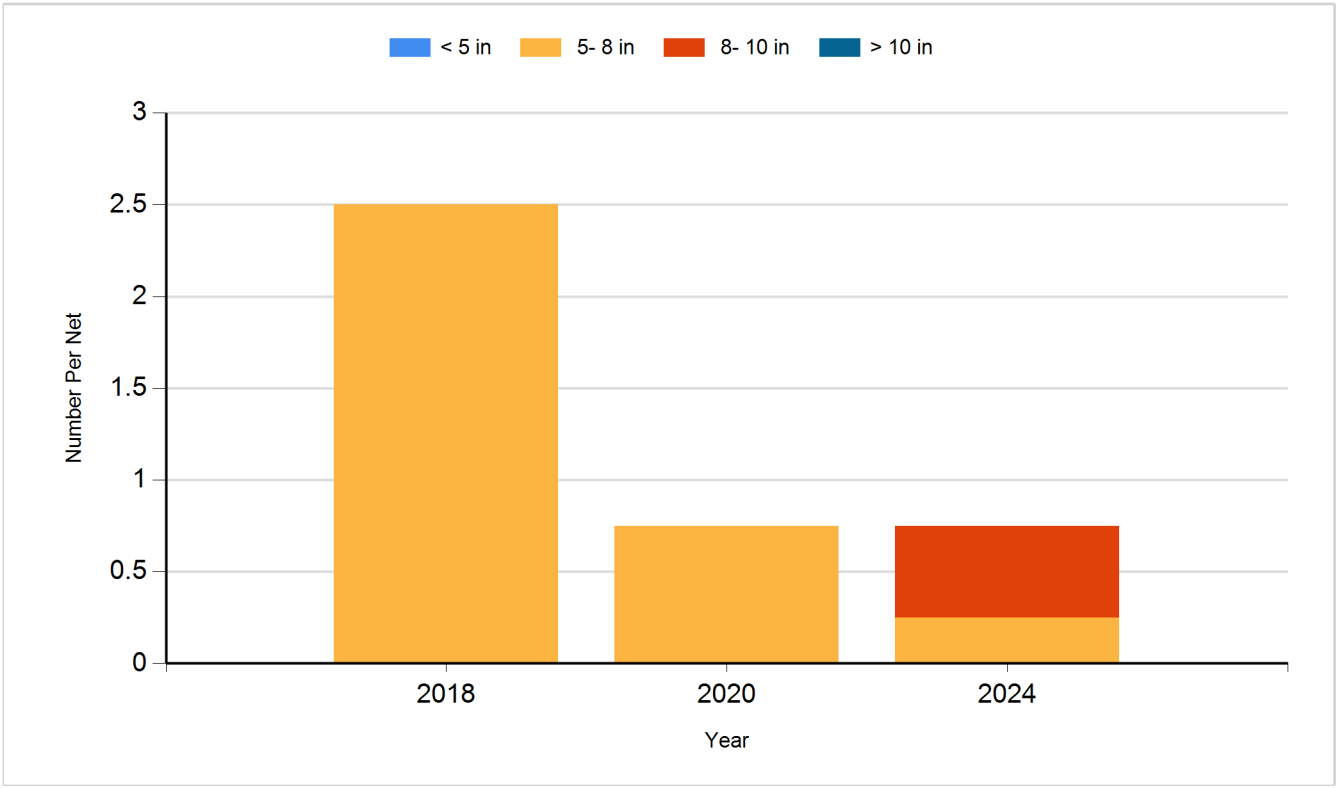
Species: Walleye
Gear: AFS std gill net



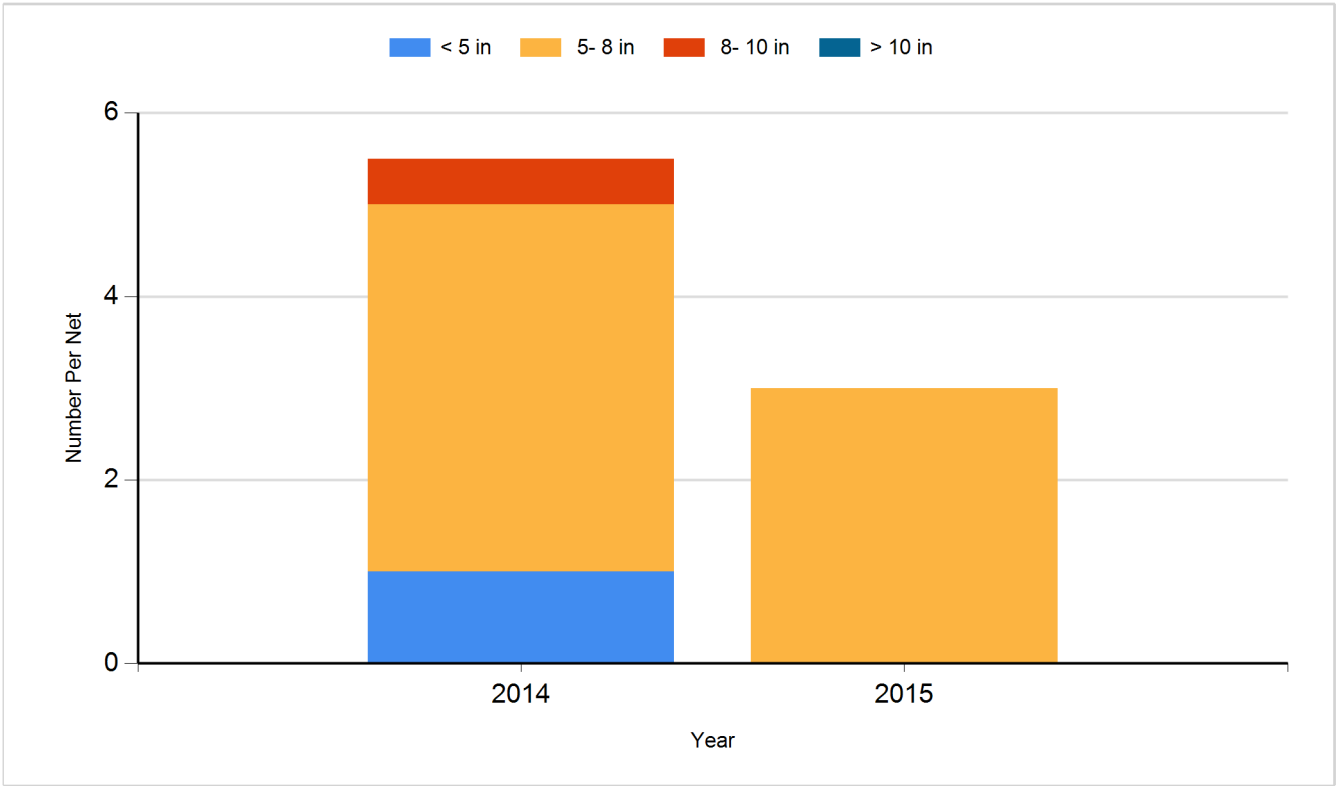
Species: Walleye
Gear: std exp gill net



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
2013	Gizzard Shad	Adult	35
2013	Walleye	Large Fingerling	4,000
2014	Channel Catfish	Adult	200
2014	Gizzard Shad	Adult	50
2014	Largemouth Bass	Juvenile	400
2014	Yellow Perch	Adult	650
2015	Gizzard Shad	Adult	13
2015	Smallmouth Bass	Adult	380
2015	Walleye	Fingerling	900
2016	Walleye	Fingerling	25,500
2017	Walleye	Small Fingerling	20,900
2018	Walleye	Small Fingerling	50,000
2019	Walleye	Small Fingerling	21,420
2021	Walleye	Small Fingerling	30,000
2022	Walleye	Juvenile	47,624
2023	Walleye	Juvenile	35,000
2024	Walleye	Juvenile	41,143