

# 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

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## 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.
- **std 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.

$$CPUE = \frac{\text{number of fish}}{\text{effort}}$$

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.

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

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

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.

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

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
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

Gear	Species	CPUE										Avg	
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024		
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		118.7 3
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								225.0 0
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.

Gear	Species	Index	Year											
			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				



Gear	Species	Index	Year										
			2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	
AFS std gill net	Largemouth Bass	Wr						121	104				
		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	

Gear	Species	Index	Year									
			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										

Gear	Species	Index	Year										
			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).

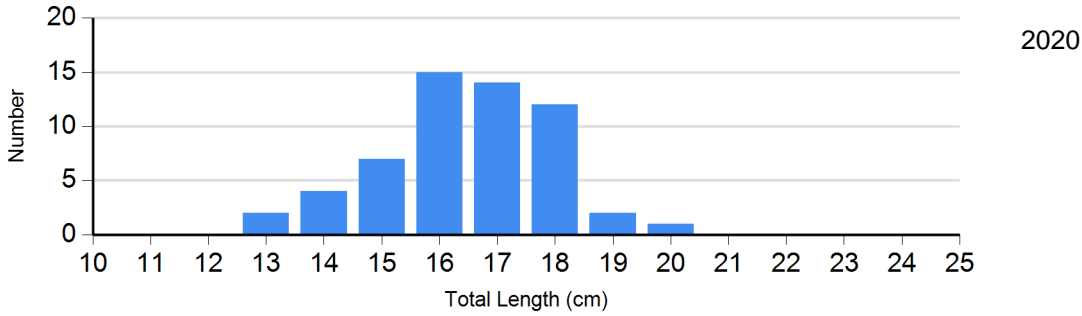
Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Black Bullhead Gill Net	2020	51	88 (1.3)	0		0		0	
	2021	8	79 (3.8)	0		0		0	
Black Crappie Frame Net	2020	382	107 (0.6)	136	89 (0.5)	18	83 (1.0)	0	
	2021	771	100 (0.4)	542	97 (0.6)	533	92 (0.9)	20	86
	2022	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	

Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		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	

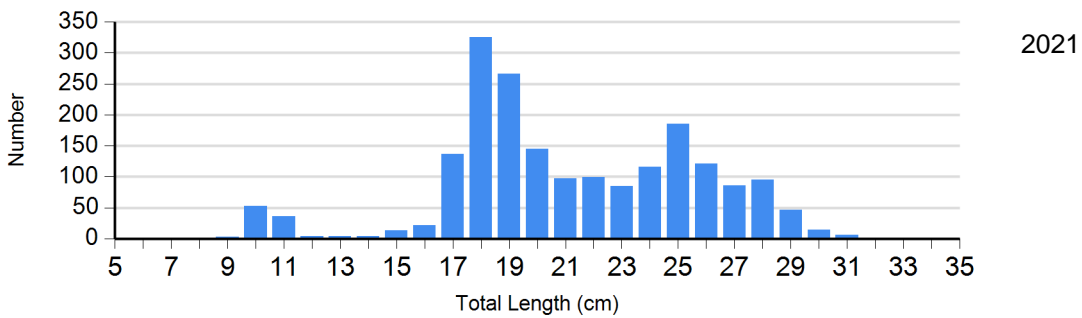
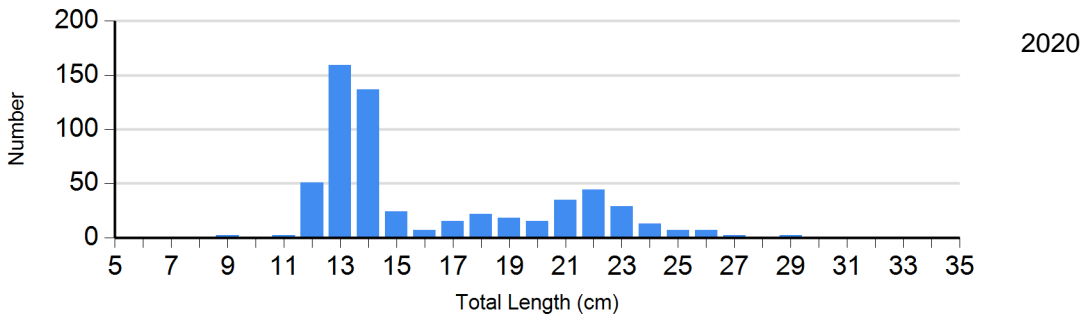
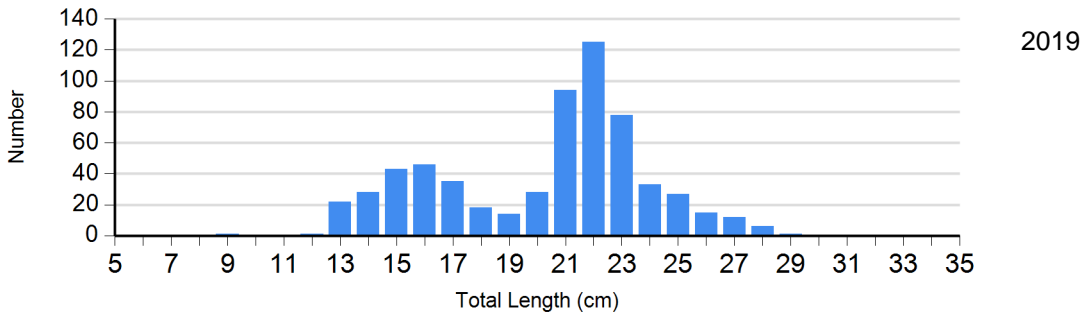
# Length Frequency Distribution

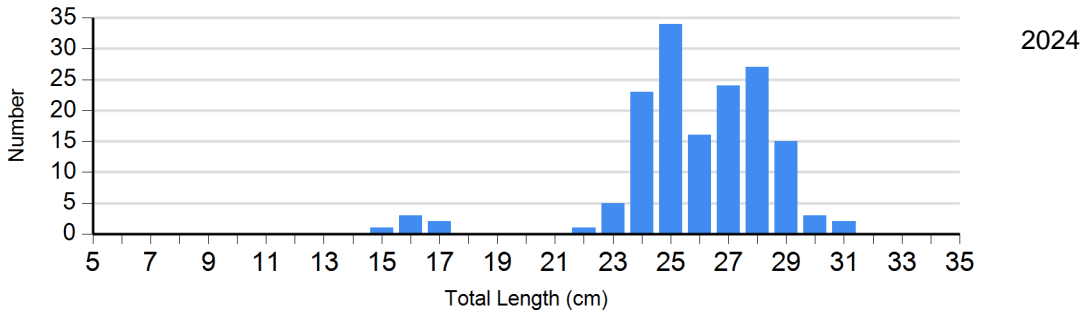
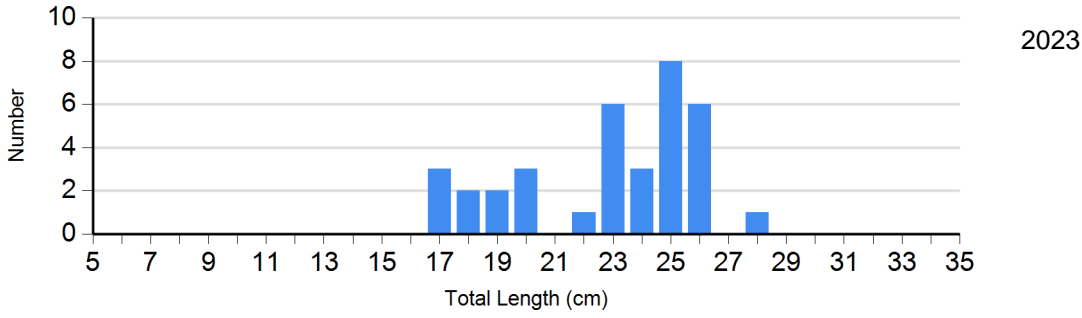
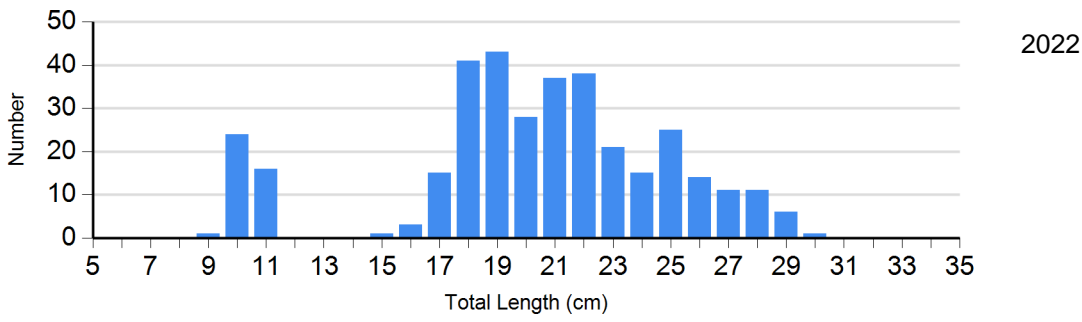
Length frequency histogram of species sampled by year.

Species: Black Bullhead  
Gear: AFS std gill net

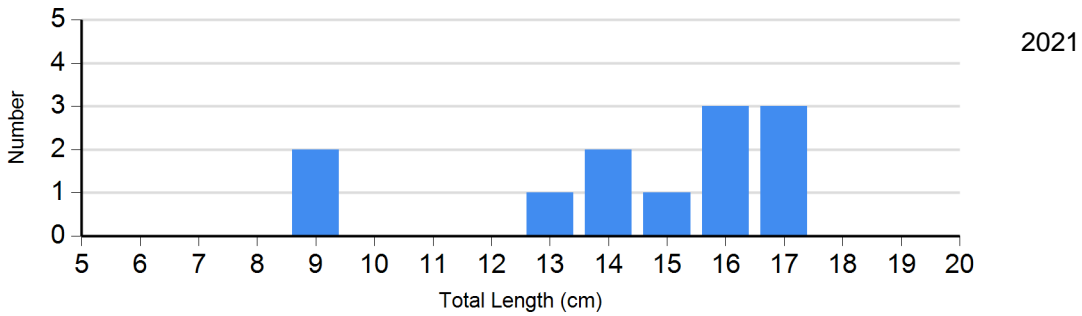


Species: Black Crappie  
Gear: frame net (std 3/4 in)

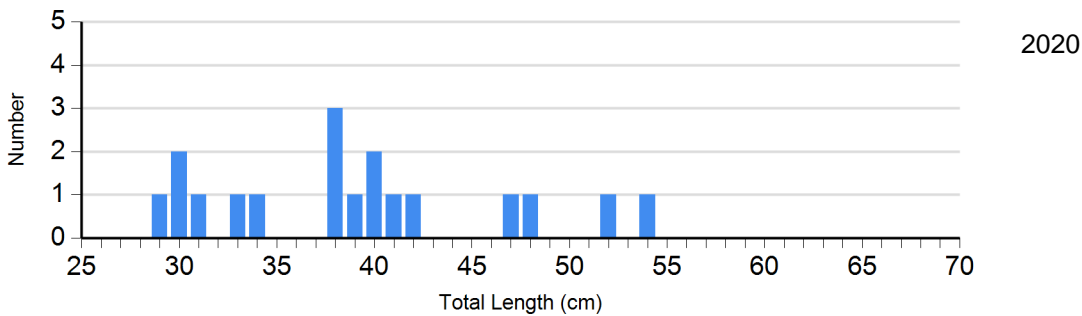




Species: Bluegill  
 Gear: frame net (std 3/4 in)

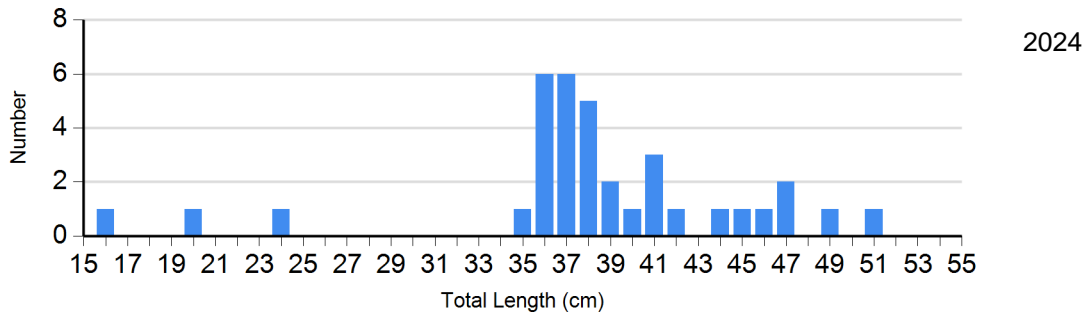
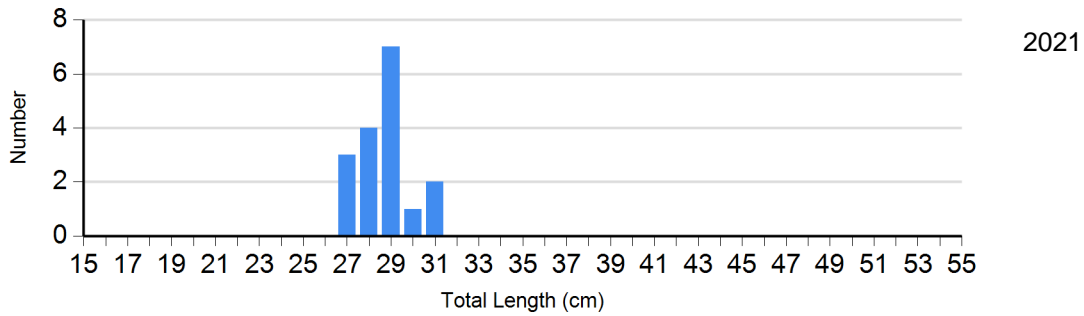
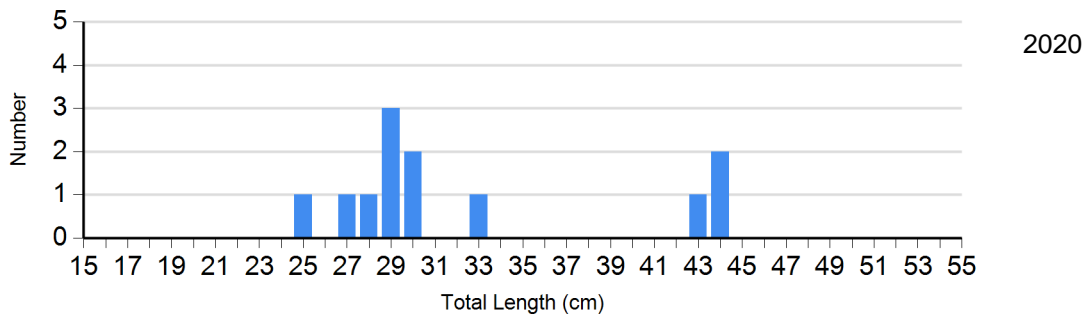


Species: Channel Catfish  
 Gear: AFS std gill net

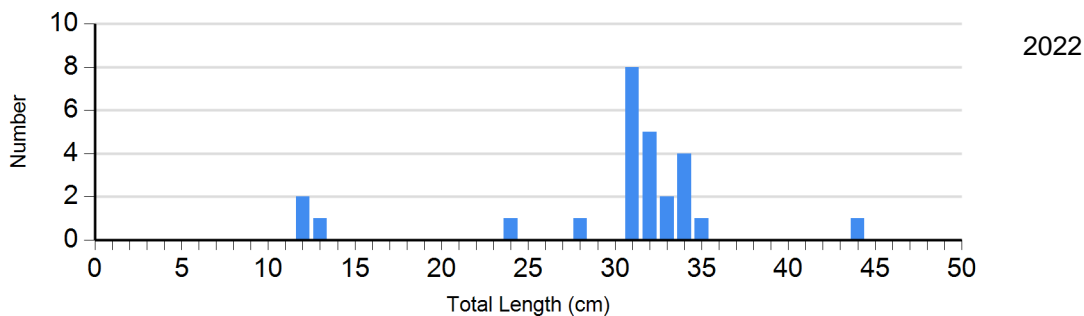
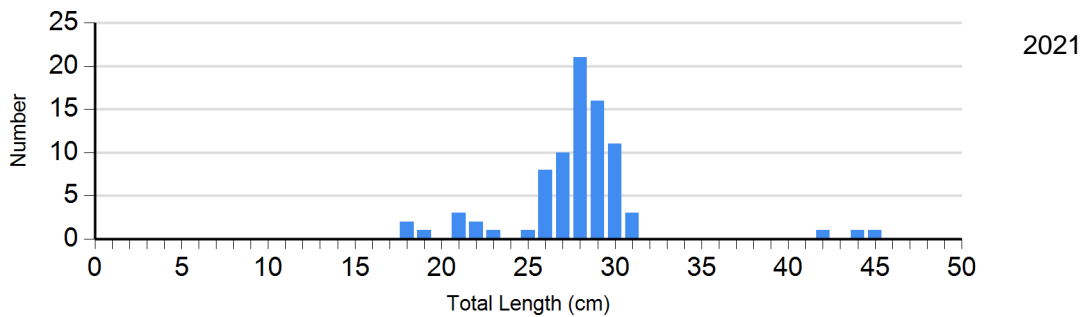


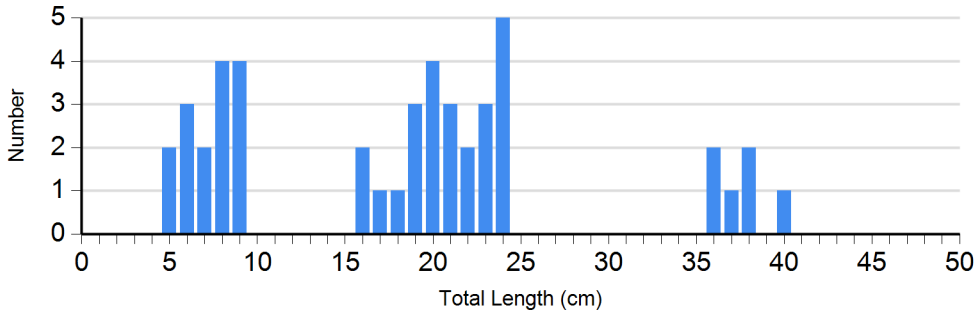
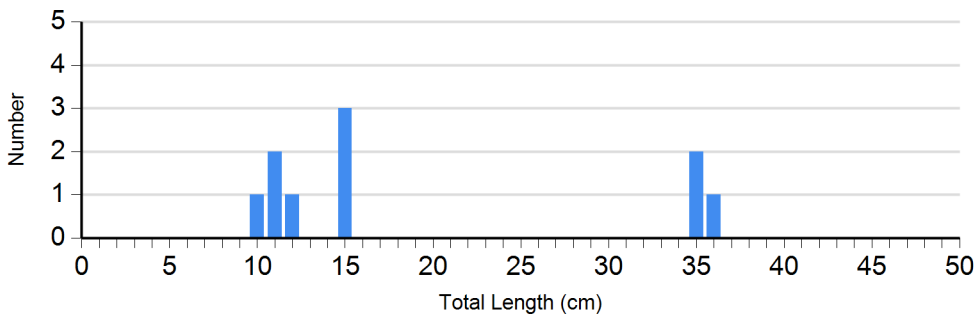


Species: Common Carp  
 Gear: AFS std gill net

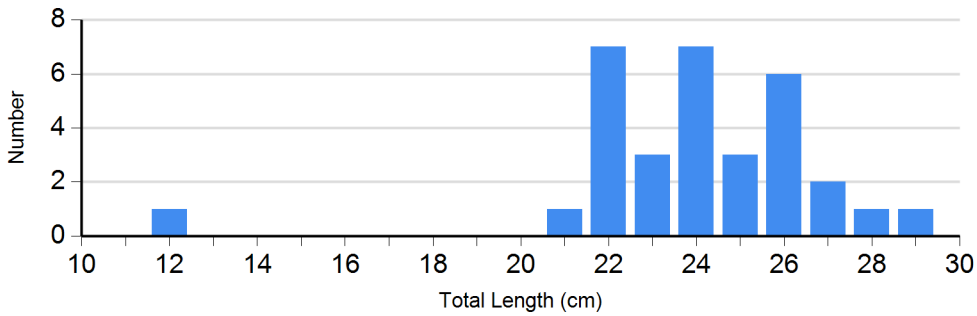
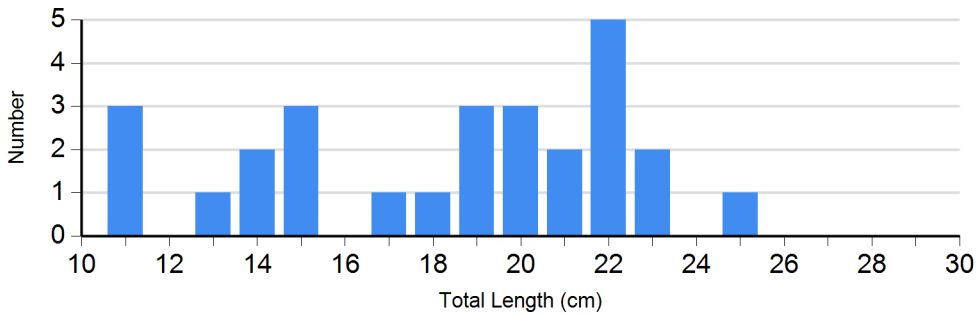


Species: Largemouth Bass  
 Gear: boat shocker (day)

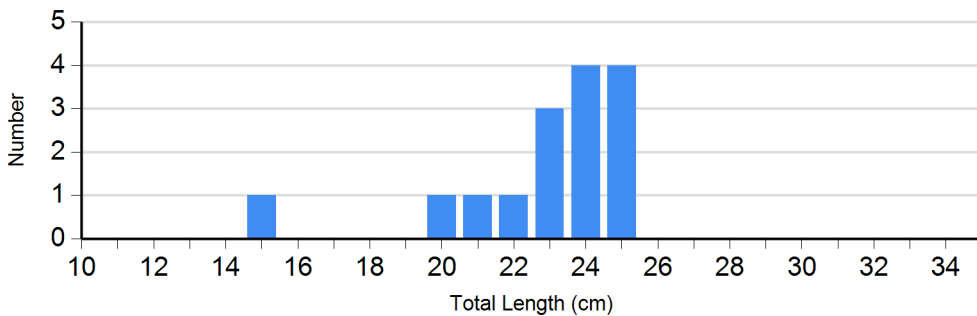




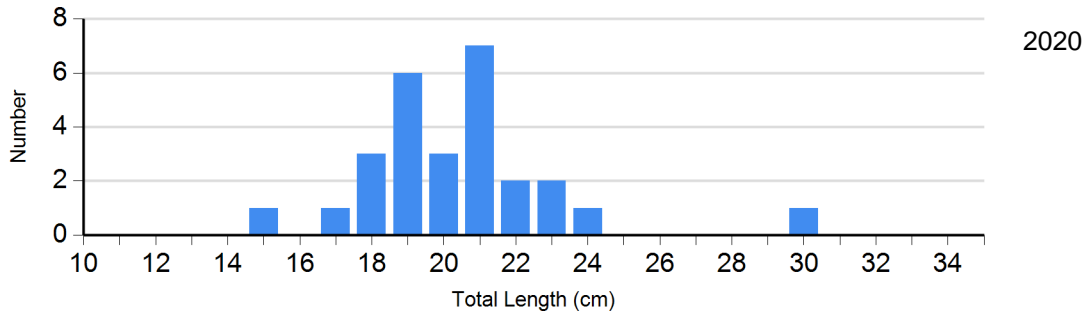
Species: Largemouth Bass  
Gear: boat shocker (night)



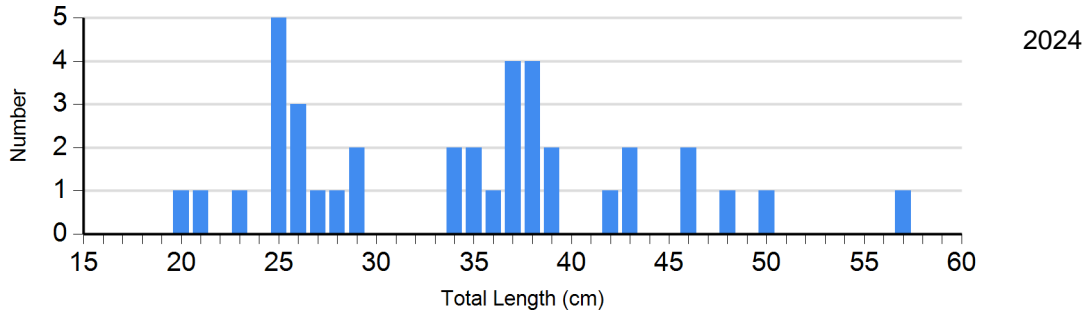
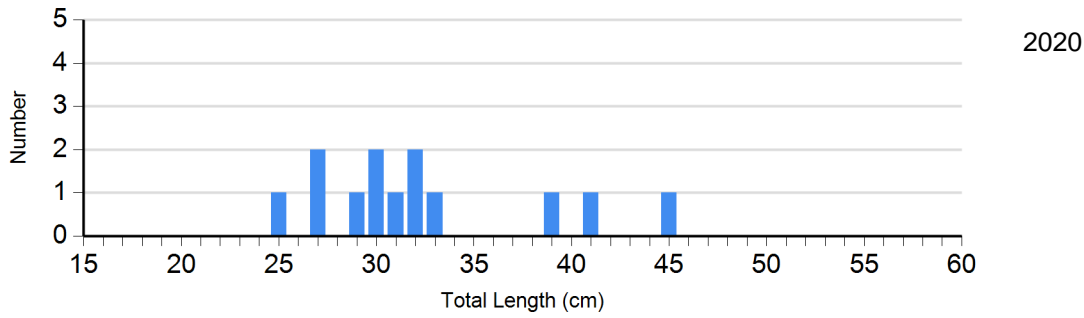
Species: Smallmouth Bass  
Gear: boat shocker (day)



Species: Smallmouth Bass  
Gear: boat shocker (night)



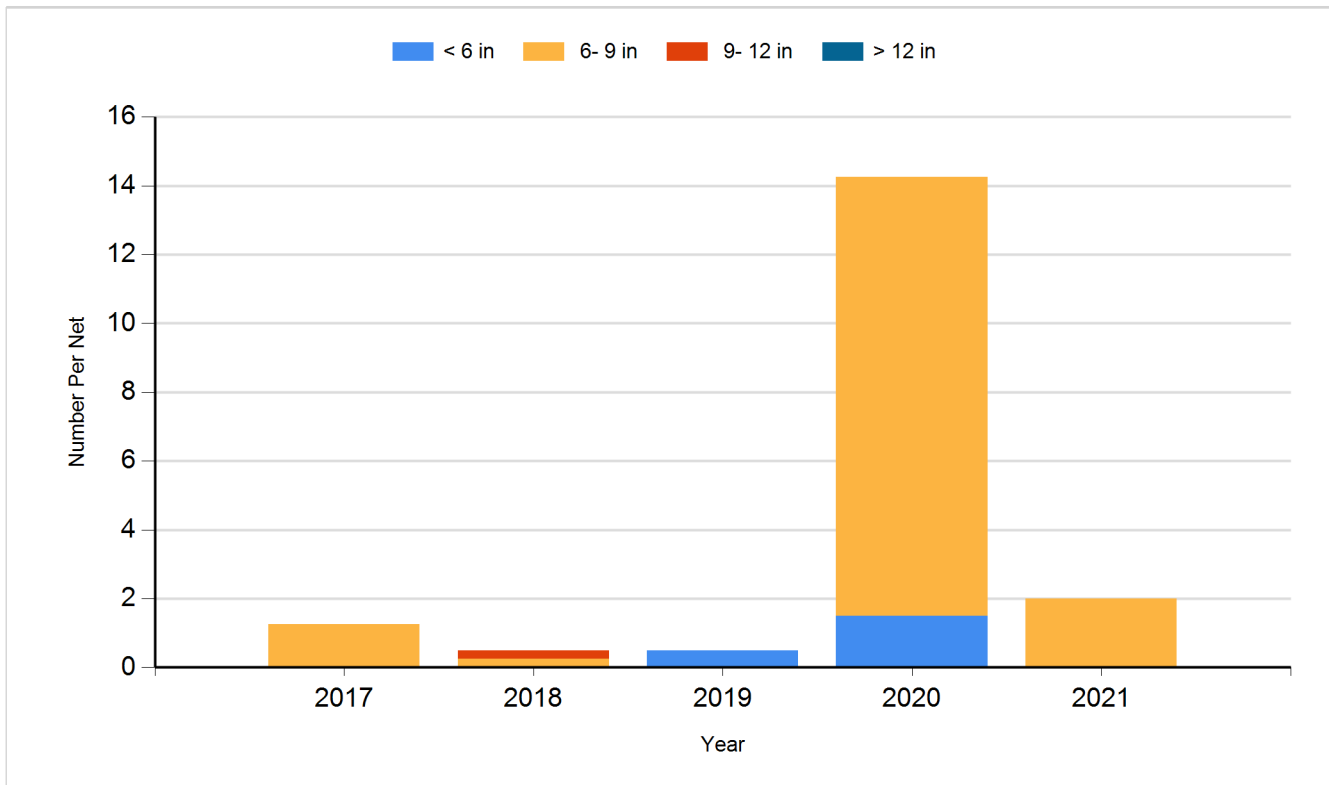
Species: Walleye  
Gear: AFS std gill net



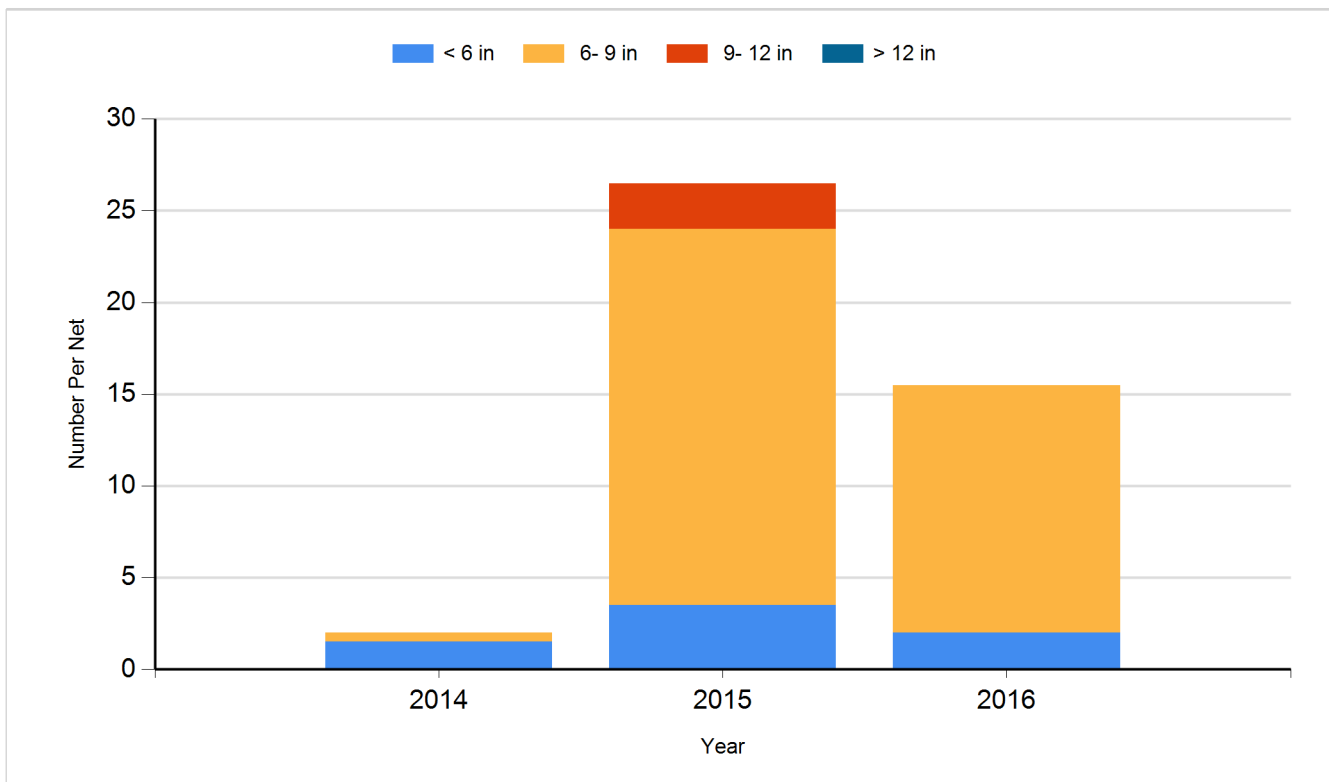
## Historic Fish Sizes and Relative Abundance

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

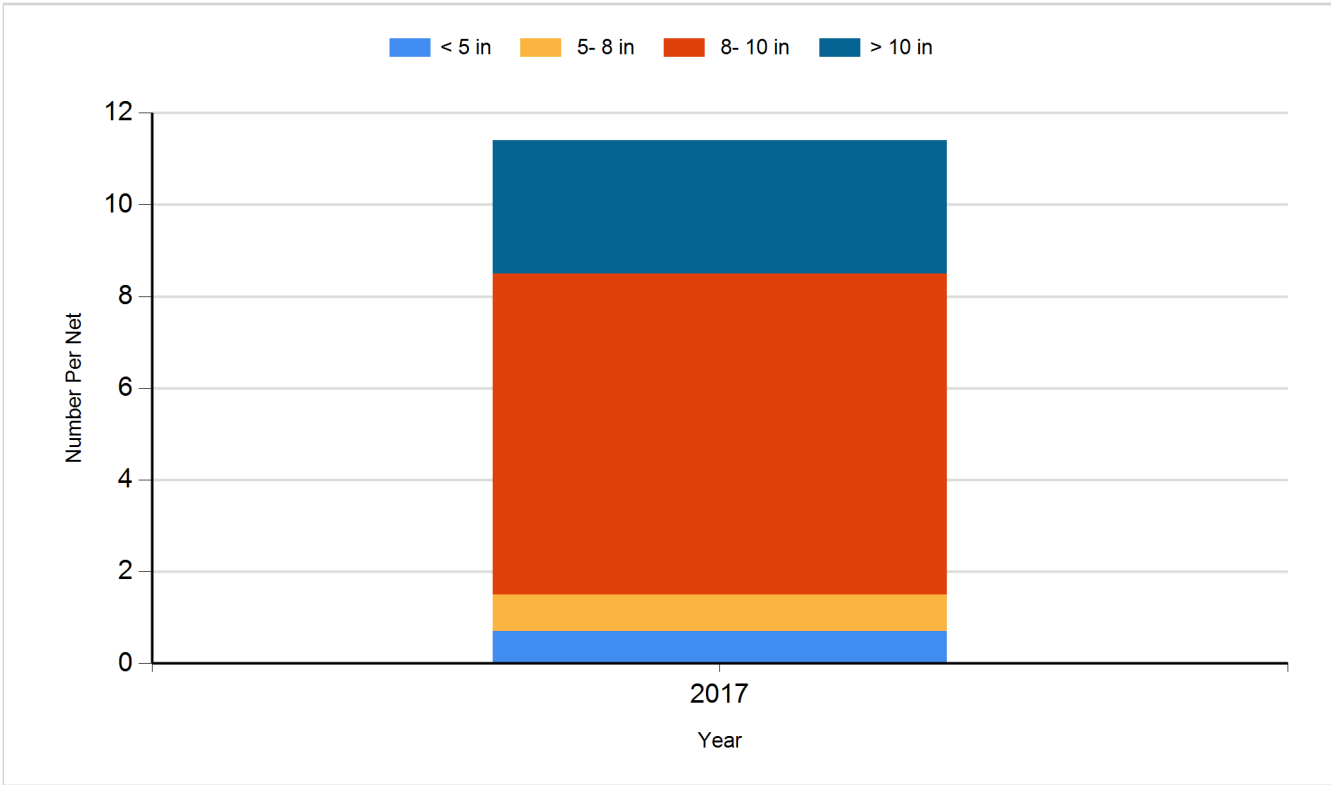
Species: Black Bullhead  
Gear: AFS std gill net



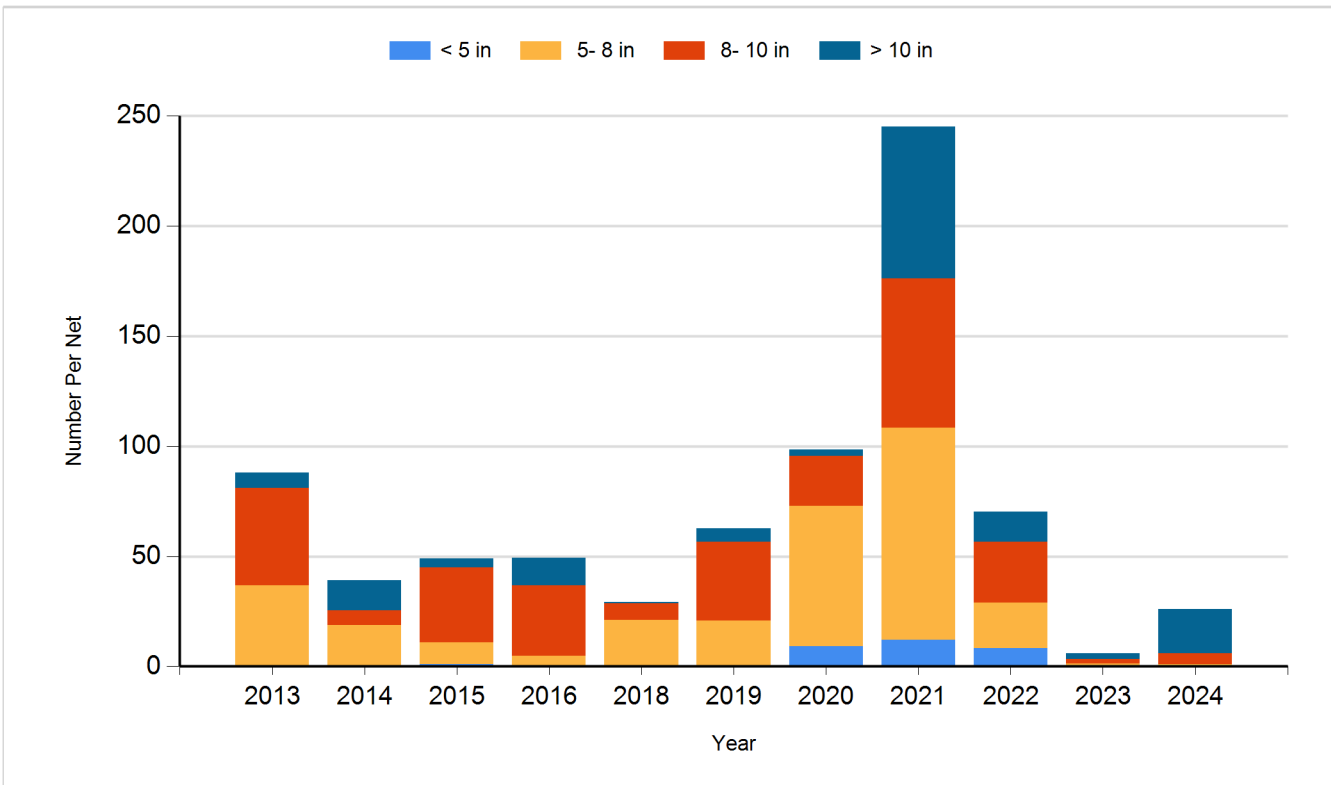
Species: Black Bullhead  
Gear: std exp gill net



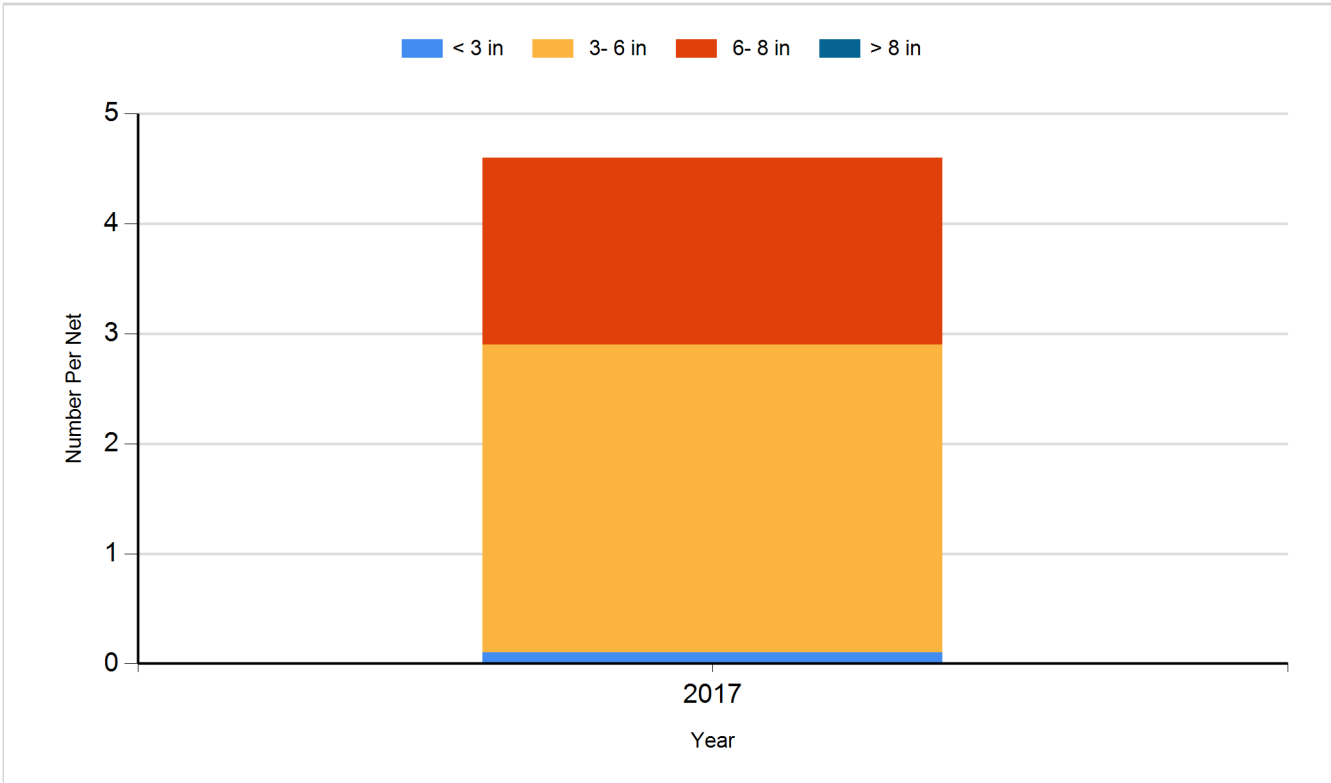
Species: Black Crappie  
Gear: AFS std frame net



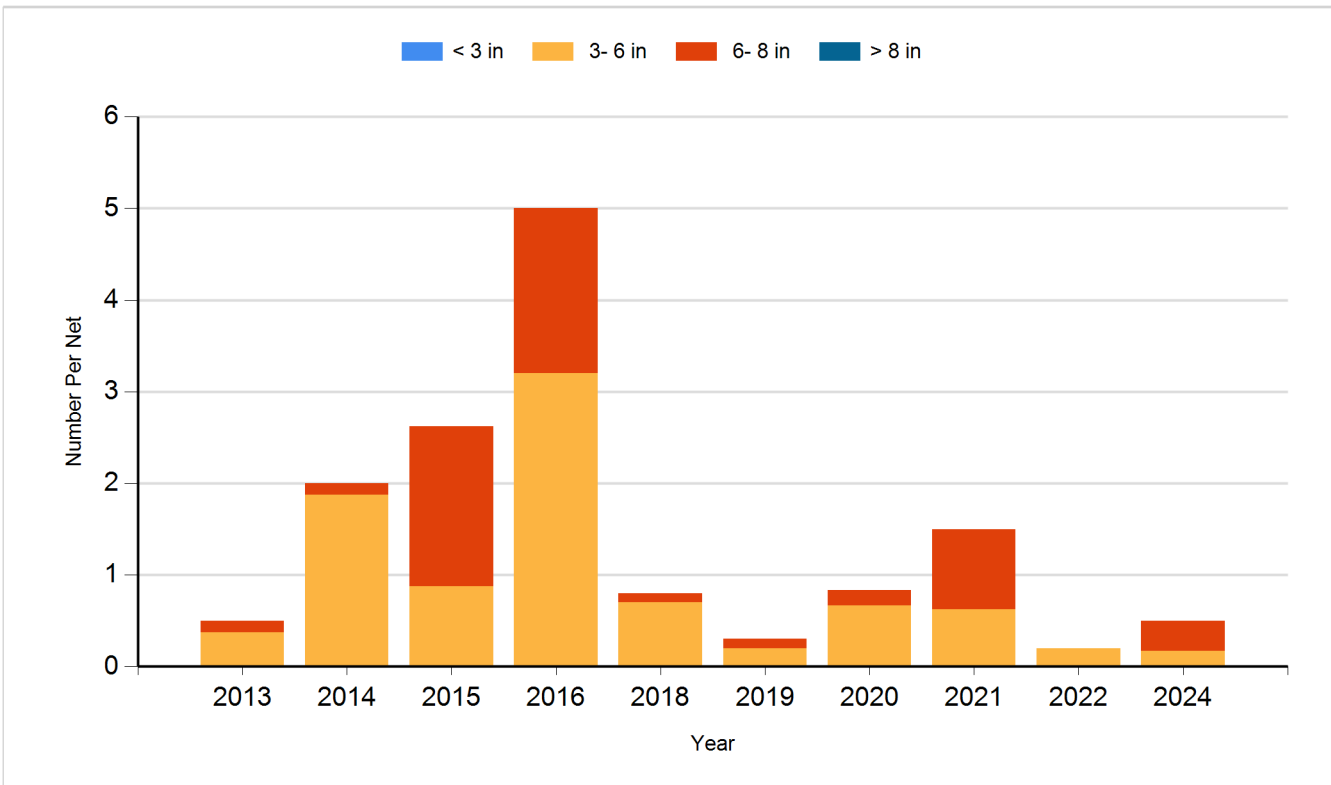
Species: Black Crappie  
Gear: frame net (std 3/4 in)



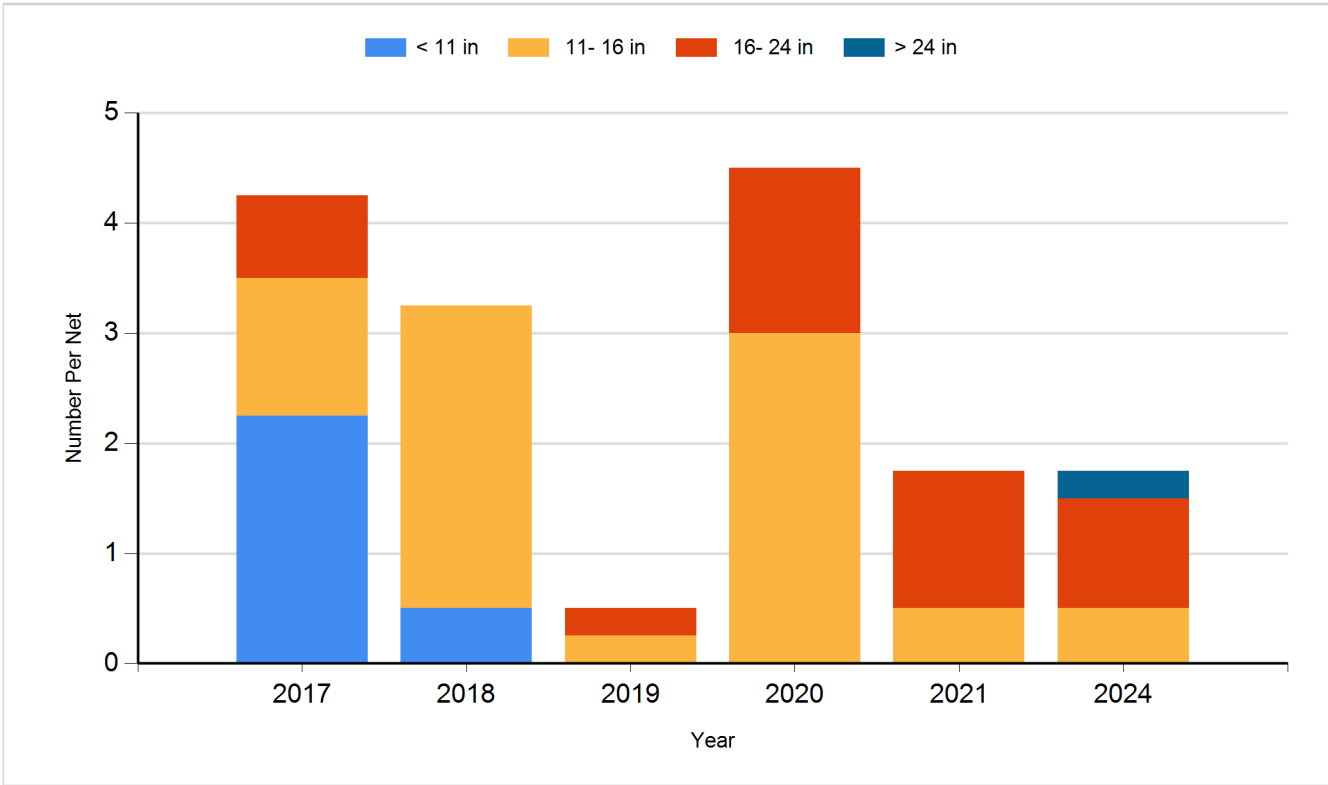
Species: Bluegill  
Gear: AFS std frame net



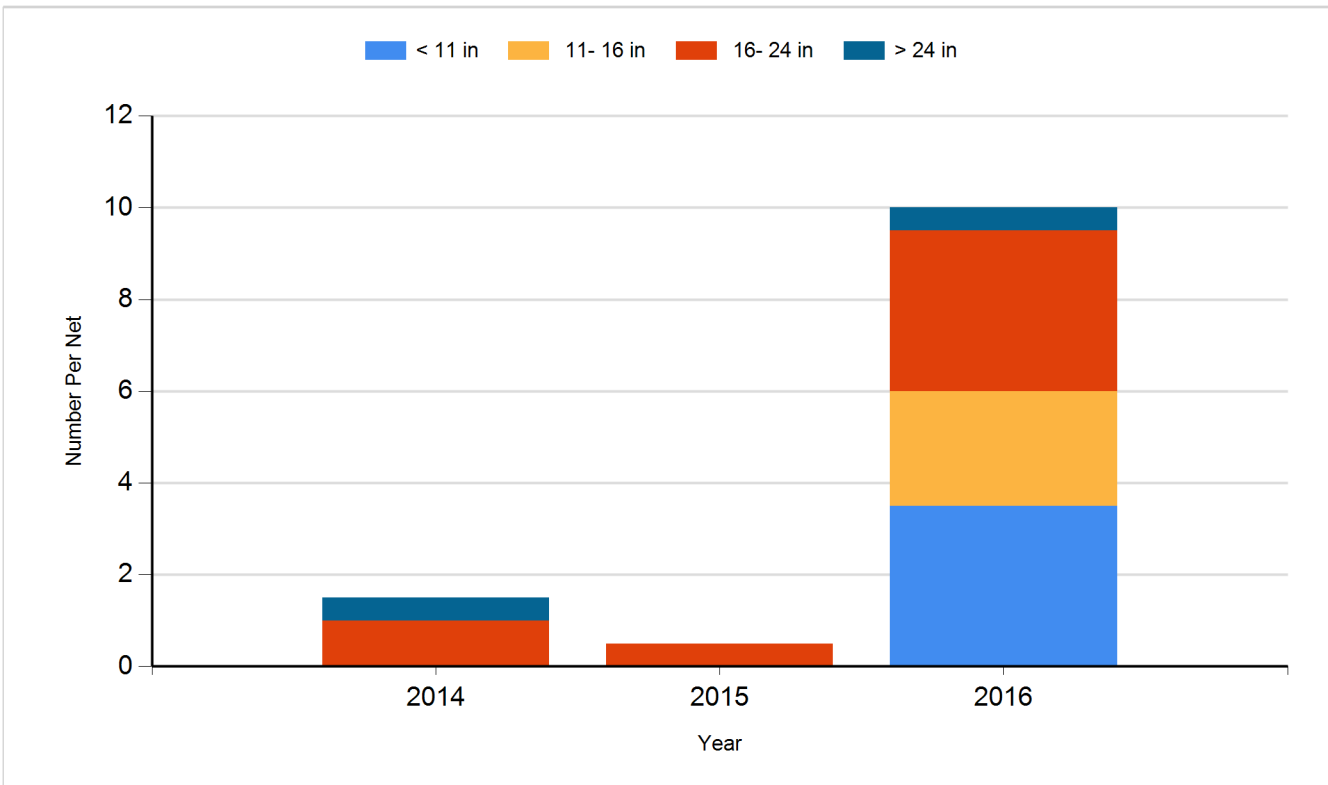
Species: Bluegill  
Gear: frame net (std 3/4 in)



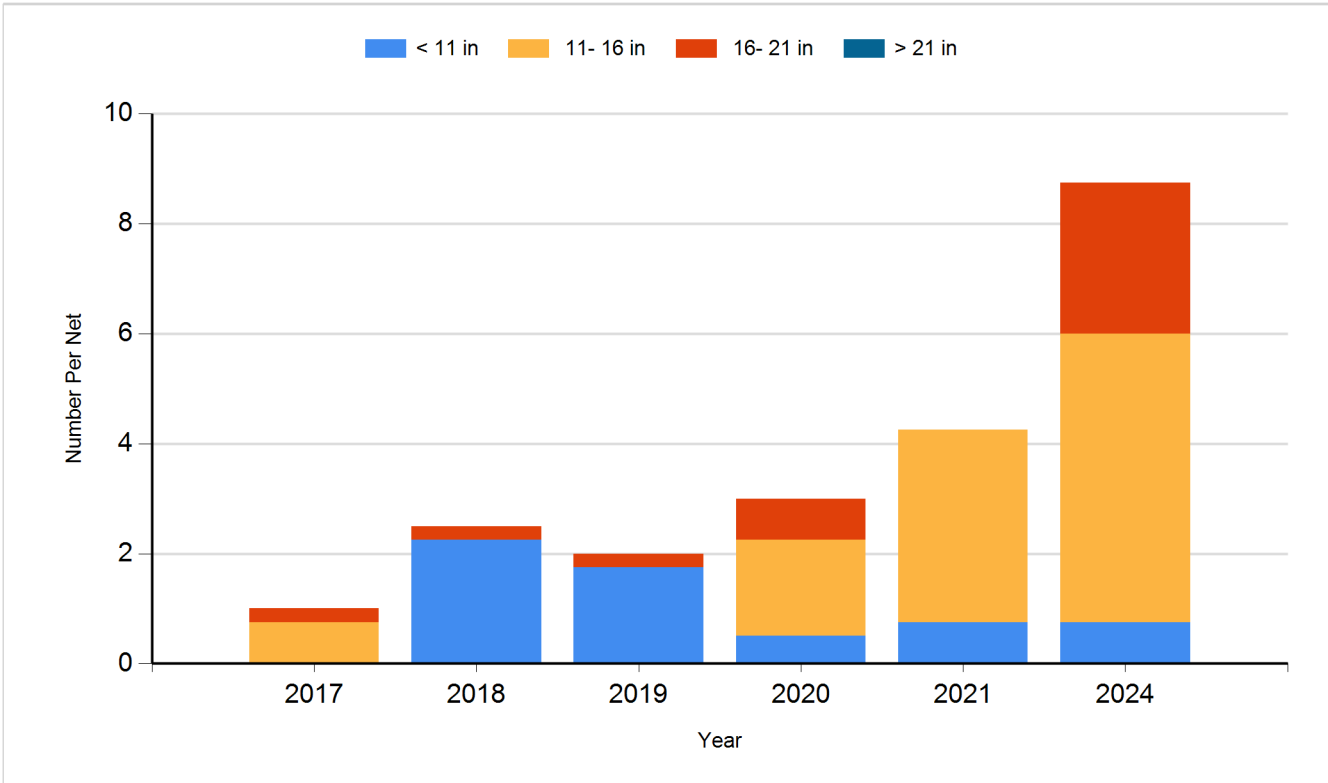
Species: Channel Catfish  
Gear: AFS std gill net



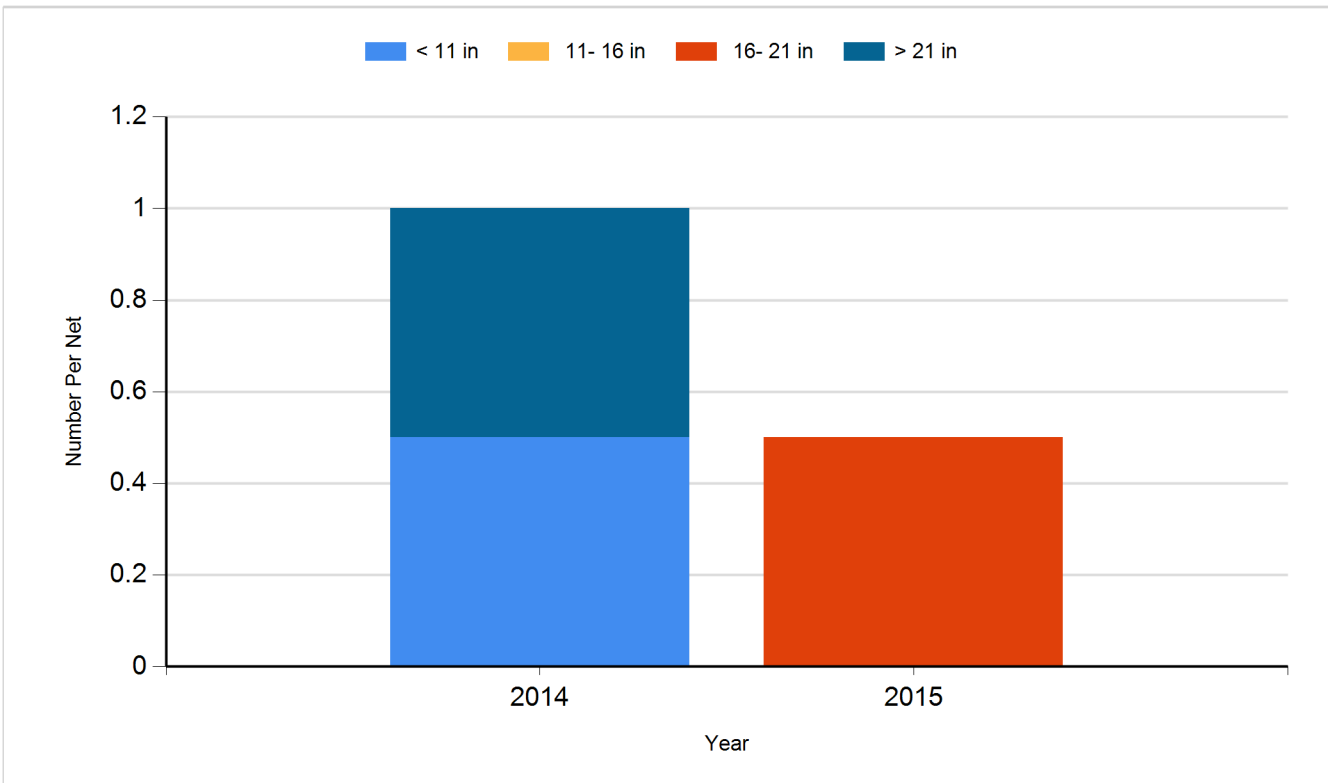
Species: Channel Catfish  
Gear: std exp gill net



Species: Common Carp  
Gear: AFS std gill net

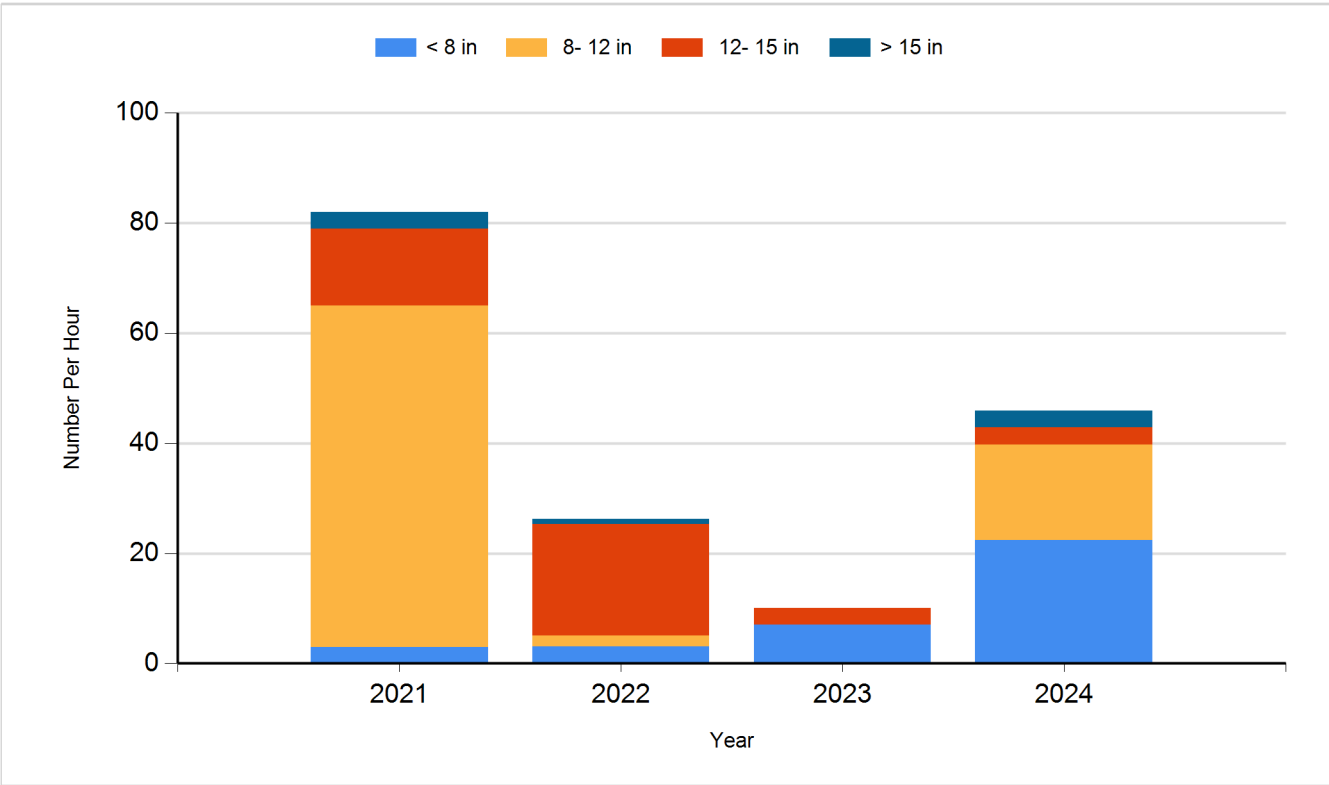


Species: Common Carp  
Gear: std exp gill net

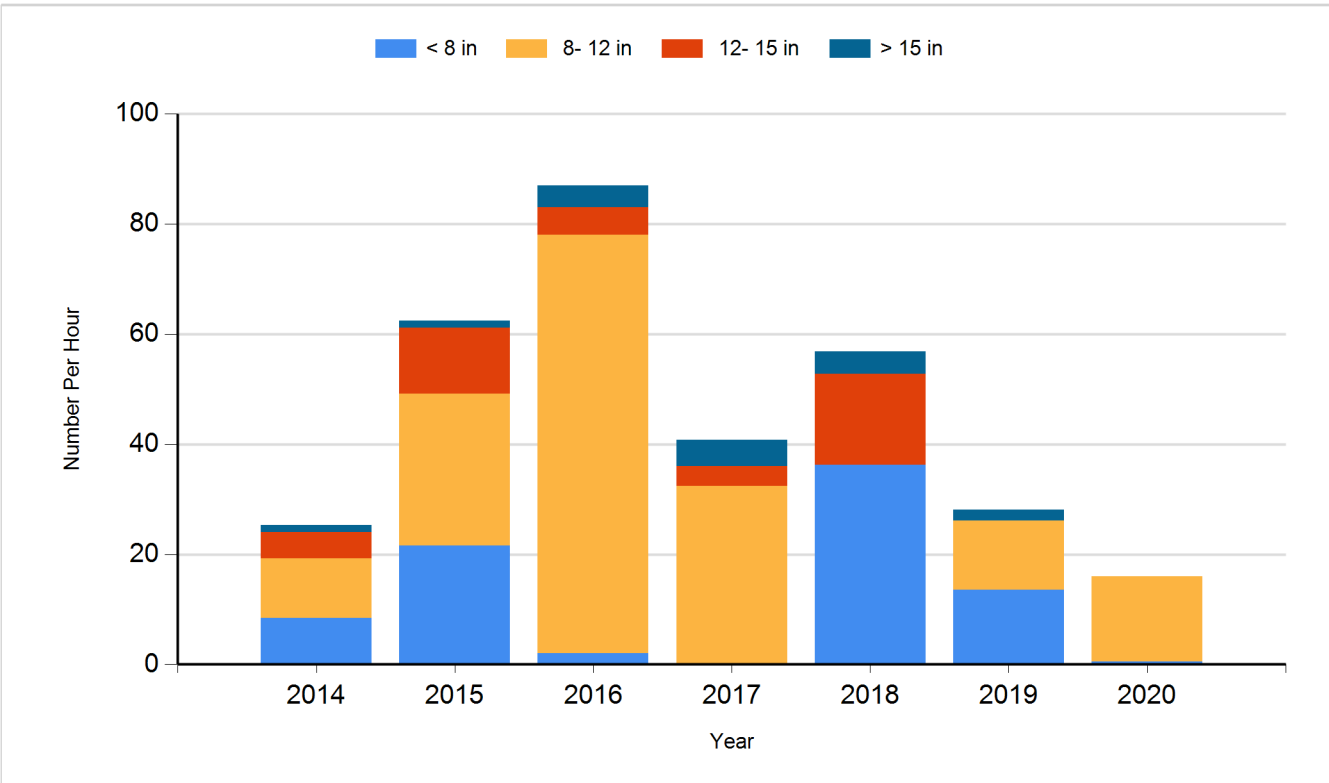




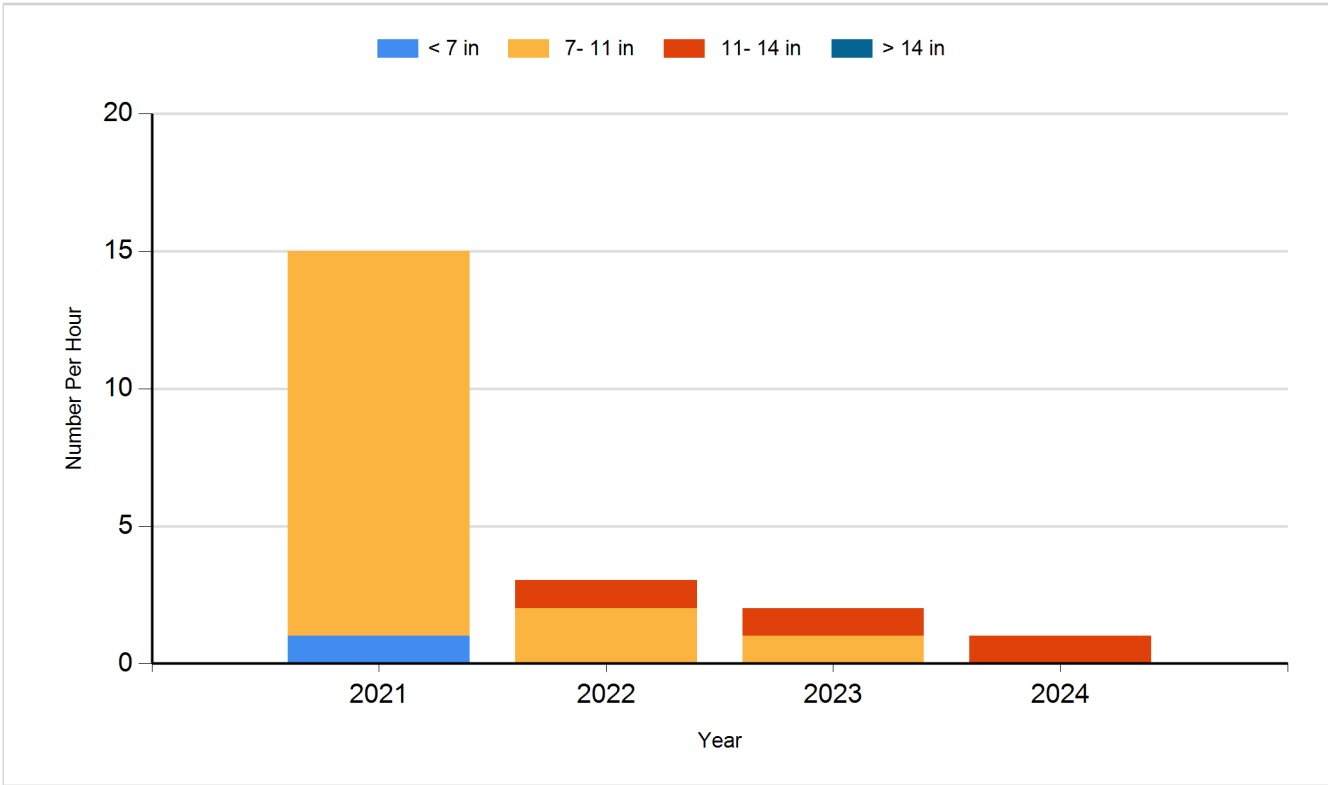
Species: Largemouth Bass  
Gear: boat shocker (day)



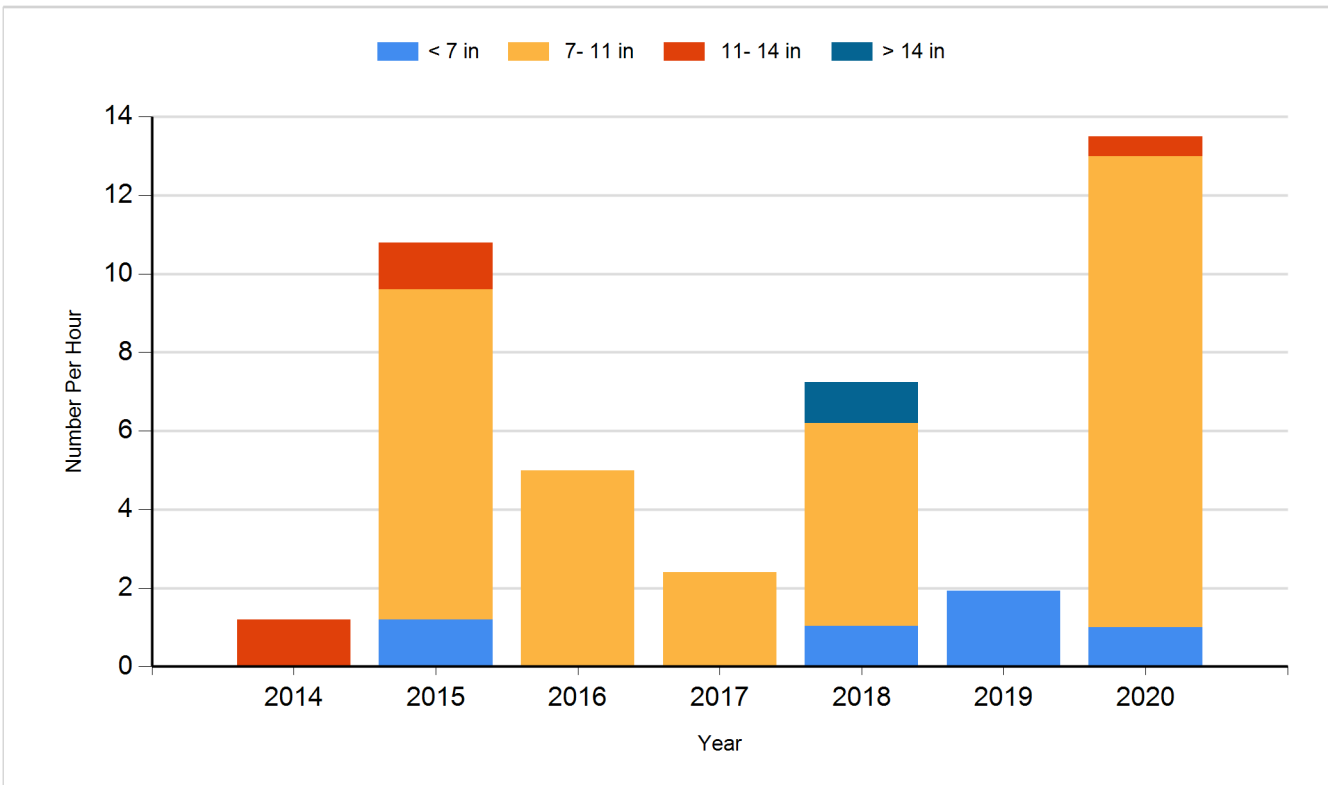
Species: Largemouth Bass  
Gear: boat shocker (night)



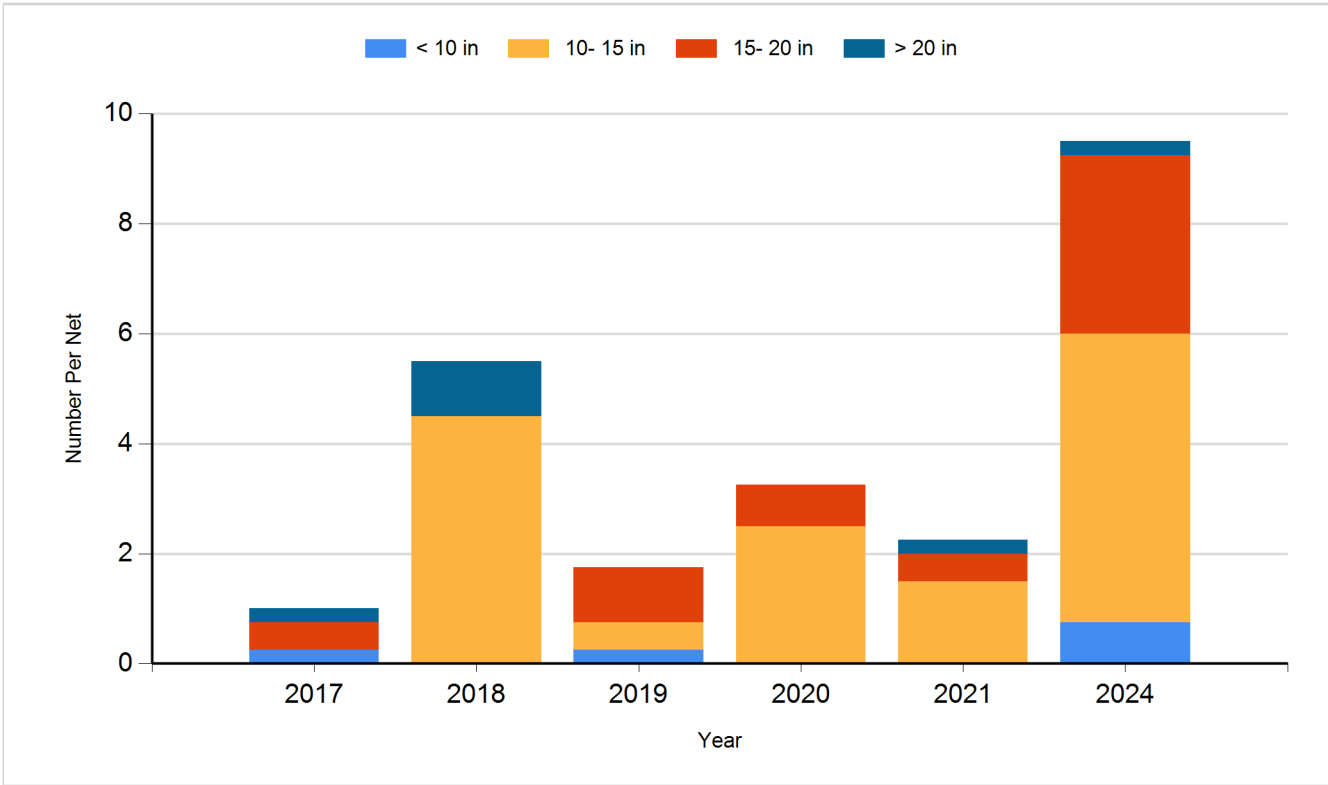
Species: Smallmouth Bass  
Gear: boat shocker (day)



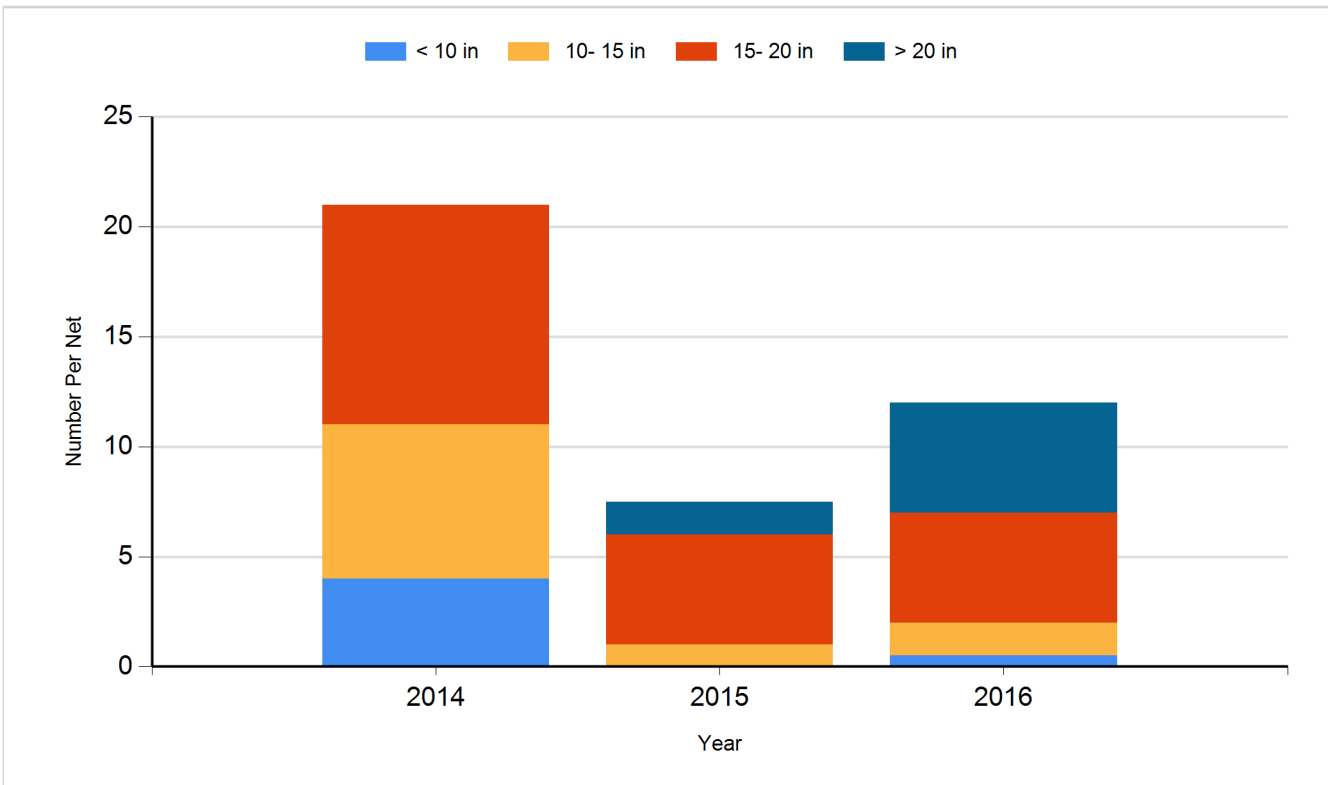
Species: Smallmouth Bass  
Gear: boat shocker (night)



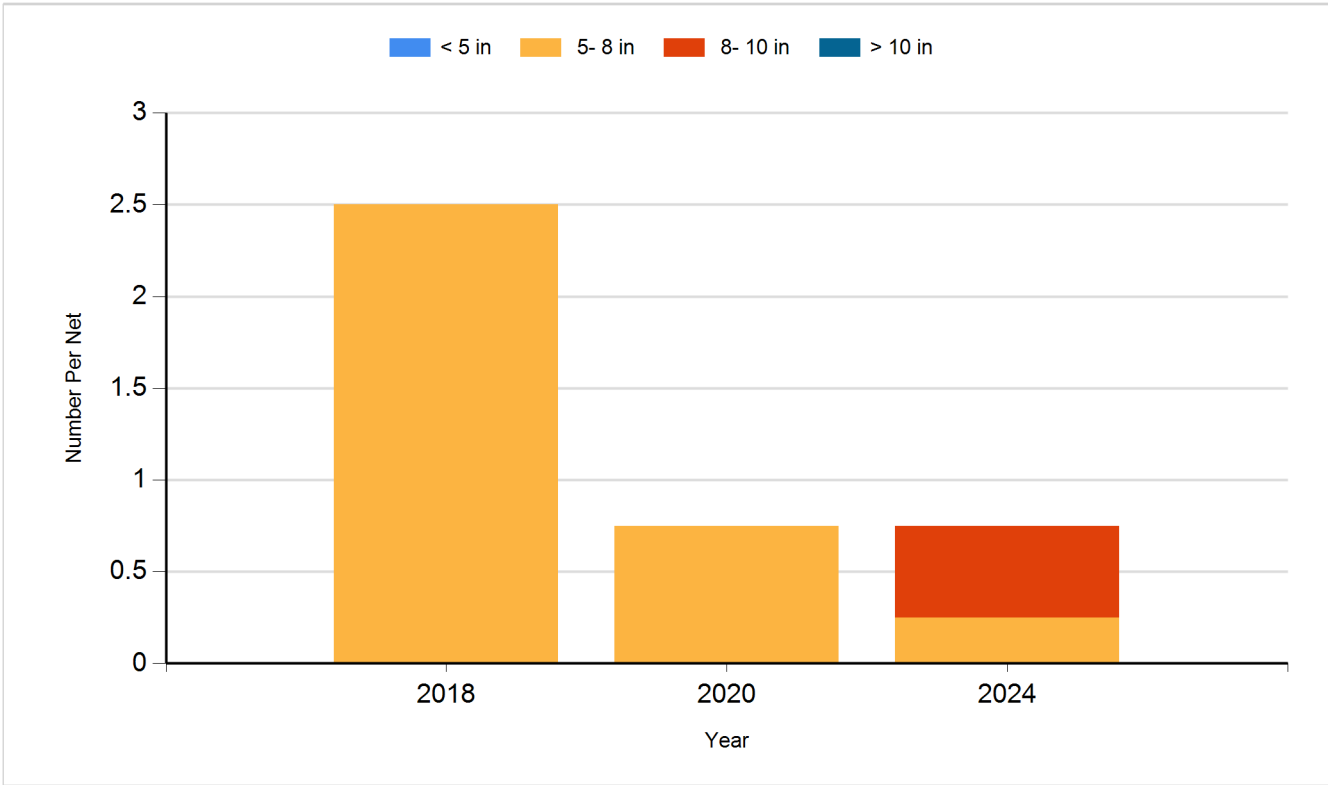
Species: Walleye  
Gear: AFS std gill net



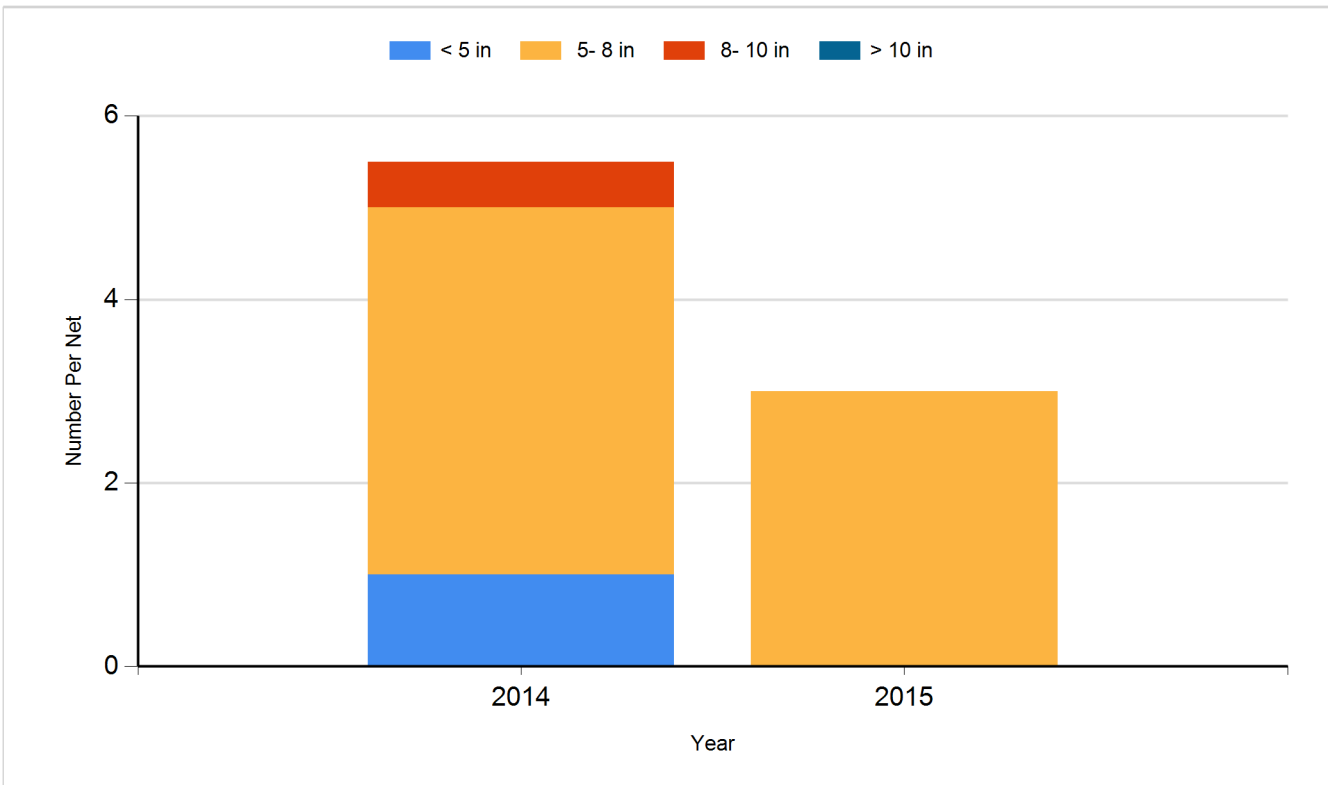
Species: Walleye  
Gear: std exp gill net



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