SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Hanson, Hanson County
LJA-Lake-425-000
2022

Lake Information

Name: Hanson

County: Hanson

Legal Description: T102-R58-Sec. 21

Surface Area: 59 Acres

Maximum Depth: 15 Feet

Mean Depth: 6 Feet

Surveys and Investigations

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

Gear	Date	Effort
frame net (std 3/4 in)	Jun 15, 2022	5 net-nights

Common Fish Species Present

Walleye

Black Bullhead

Black Crappie

Bluegill

White Crappie

Channel Catfish

Common Carp

White Sucker

Green Sunfish

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
frame net (std 3/4 in)	Black Bullhead	156	31.2	20.4	26	5	0			
	Black Crappie	46	9.2	4.6	98		70	10	85	1
	Bluegill	22	4.4	3.4	18		0		103	4
	Channel Catfish	11	2.2	2.3	100		0		89	5
	Common Carp	6	1.2	1.1	33		0			
	Green Sunfish	1	0.2	0.3	0		0			
	White Crappie	13	2.6	2.1	92		85		86	3
	White Sucker	3	0.6	0.6	100		100			

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	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Avg
AFS std frame net	Black Bullhead					113.0						113.00
	Black Crappie					6.6						6.60
	Bluegill					10.2						10.20
	Channel Catfish					0.0						0.00
	Common Carp					0.4						0.40
	Gizzard Shad					6.4						6.40
	Green Sunfish					2.2						2.20
	Largemouth Bass					0.2						0.20
	Walleye					1.6						1.60
	White Crappie					4.8						4.80
	White Sucker					0.4						0.40
AFS std gill net	Black Bullhead					22.0	12.7	18.3				17.67
	Black Crappie					0.0	0.2	0.0				0.07
	Channel Catfish					0.5	7.3	4.0				3.93
	Common Carp					4.0	1.7	1.0				2.23
	Gizzard Shad					3.5	0.0	0.0				1.17
	Northern Pike					1.5	0.0	0.0				0.50
	Walleye					3.5	0.0	0.0				1.17
	White Sucker					0.5	0.5	2.3				1.10
frame net (std 3/4 in)	Black Bullhead		30.8	70.4	42.2		148.5	78.4			31.2	66.92
	Black Crappie		1.4	4.4	4.6		1.3	3.2			9.2	4.02
	Bluegill		7.8	2.4	8.0		15.8	17.6			4.4	9.33
	Channel Catfish		0.0	0.0	0.0		0.0	1.4			2.2	0.60
	Common Carp		0.4	0.4	0.0		0.0	0.4			1.2	0.40
	Green Sunfish		0.0	0.0	0.0		1.3	1.0			0.2	0.42
	Northern Pike		0.4	0.6	1.4		0.0	0.0			0.0	0.40
	Walleye		0.0	0.0	0.4		0.3	0.0			0.0	0.12
	White Crappie		1.2	0.6	13.4		0.5	5.6			2.6	3.98
	White Sucker		0.0	0.0	0.2		0.0	0.4			0.6	0.20
	Yellow Perch		0.0	0.8	0.0		0.0	0.0			0.0	0.13
std exp gill net	Black Bullhead		2.0	0.0	5.3							2.43
	Black Crappie		0.0	1.3	1.0							0.77
	Bluegill		0.7	0.0	0.0							0.23

		CPUE										
Gear	Species	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Avg
std exp gill net	Channel Catfish		0.3	0.7	0.3							0.43
	Common Carp		2.0	3.3	10.3							5.20
	Northern Pike		1.7	4.0	2.0							2.57
	White Crappie		0.0	0.3	1.0							0.43
	White Sucker		0.3	0.3	0.0							0.20

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	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
AFS std frame net	Black Bullhead	PSD					0					
		PSD-P					0					
	Black Crappie	PSD					76					
		PSD-P					9					
		Wr					85					
	Bluegill	PSD					78					
		PSD-P					0					
		Wr					93					
	Channel Catfish	PSD					0					
		PSD-P					0					
	Common Carp	PSD					50					
		PSD-P					0					
	Green Sunfish	PSD					27					
		PSD-P					0					
	Walleye	PSD					0					
		PSD-P					0					
		Wr					79					
	White Crappie	PSD					75					
		PSD-P					4					
		Wr					81					
	White Sucker	PSD					100					
		PSD-P					100					
AFS std gill net	Black Bullhead	PSD					0	0	0			
		PSD-P					0	0	0			
	Black Crappie	PSD						100				
		PSD-P						0				
		Wr						84				
	Channel Catfish	PSD					0	2	0			
		PSD-P					0	0	0			
		Wr					99	95	97			
	Common Carp	PSD					13	10	67			
		PSD-P					0	0	0			
	Walleye	PSD					29					

			Year									
Gear	Species	Index	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
AFS std gill net	Walleye	PSD-P					0					
		Wr					84					
	White Sucker	PSD					100	100	14			
		PSD-P					100	100	14			
frame net (std 3/4 in)	Black Bullhead	PSD		0	14	0		0	0			26
		PSD-P		0	0	0		0	0			0
	Black Crappie	PSD		14	41	9		100	100			98
		PSD-P		14	18	9		100	100			70
		Wr		87	89	96		79	92			85
	Bluegill	PSD		15	8	65		29	44			18
		PSD-P		0	0	0		0	0			0
		Wr		96	94	108		102	111			103
	Channel Catfish	PSD			0	0		0	29			100
		PSD-P			0	0		0	0			0
		Wr							104			89
	Common Carp	PSD		0	50				100			33
		PSD-P		0	50				0			0
	Green Sunfish	PSD						20	20			0
		PSD-P						0	0			0
		Wr						84	113			
	Walleye	PSD				0		100				
		PSD-P				0		0				
		Wr				86		82				
	White Crappie	PSD		83	67	3		100	100			92
		PSD-P		83	33	1		100	100			85
		Wr		74	86	103		83	100			86
	White Sucker	PSD				100			100			100
		PSD-P				100			0			100
std exp gill net	Black Bullhead	PSD		50	0	0						
		PSD-P		17	0	0						
	Black Crappie	PSD			0	0						
		PSD-P			0	0						
		Wr			83	92						
	Bluegill	PSD		50								
		PSD-P		0								
		Wr		103								

			Year									
Gear	Species	Index	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
std exp gill net	Channel Catfish	PSD		100	100	0						
		PSD-P		0	100	0						
		Wr		88	88	85						
	Common Carp	PSD		0	30	6						
		PSD-P		0	0	0						
	White Crappie	PSD			0	0						
		PSD-P			0	0						
		Wr			91	95						
	White Sucker	PSD		0	100							
		PSD-P		0	100							

Fish Condition

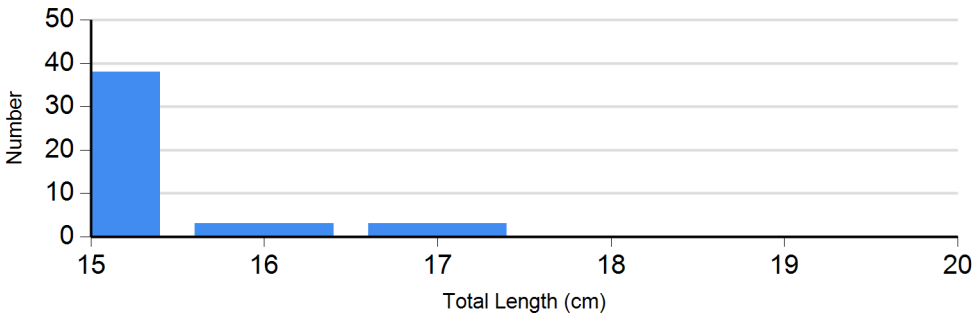
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2018	0		0		3	80 (3.1)	2	78 (1.8)
	2019	0		0		4	98 (8.4)	12	89 (1.9)
	2022	1	92	13	87 (1.7)	32	84 (0.8)	0	
Bluegill Frame Net	2018	45	106 (2.0)	18	91 (1.7)	0		0	
	2019	49	117 (2.5)	39	105 (1.5)	0		0	
	2022	18	106 (3.8)	4	93 (3.7)	0		0	
Channel Catfish Gill Net	2018	43	95 (1.1)	1	95	0		0	
	2019	12	97 (2.4)	0		0		0	
White Crappie Frame Net	2018	0		0		2	83 (0.8)	0	
	2019	0		0		3	104 (5.0)	25	99 (0.9)
	2022	1	97	1	95	11	84 (2.2)	0	

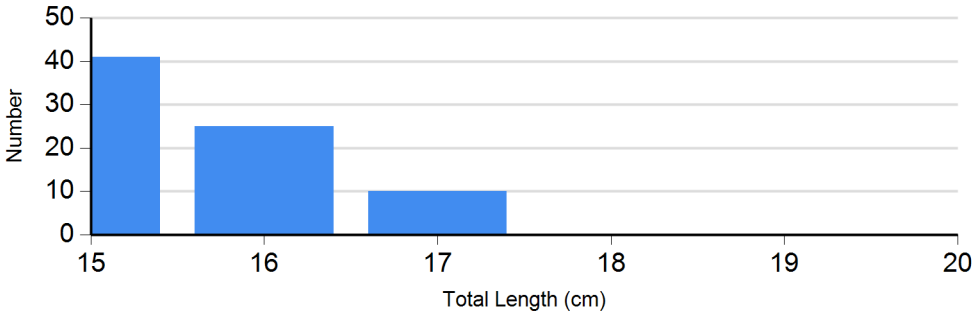
Length Frequency Distribution

Length frequency histogram of species sampled by year.

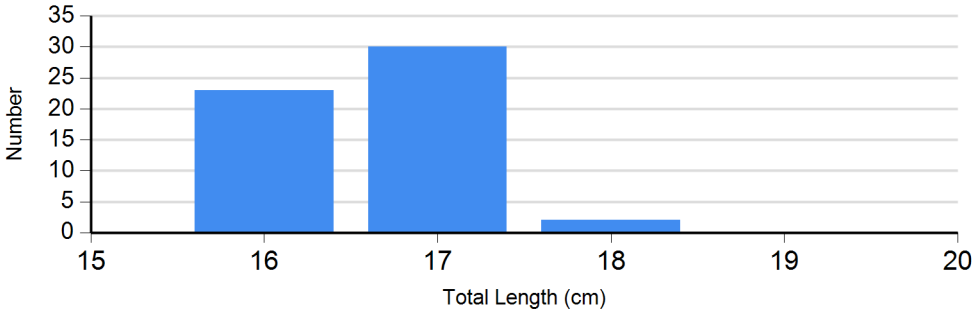
Species: Black Bullhead
Gear: AFS std gill net



2017

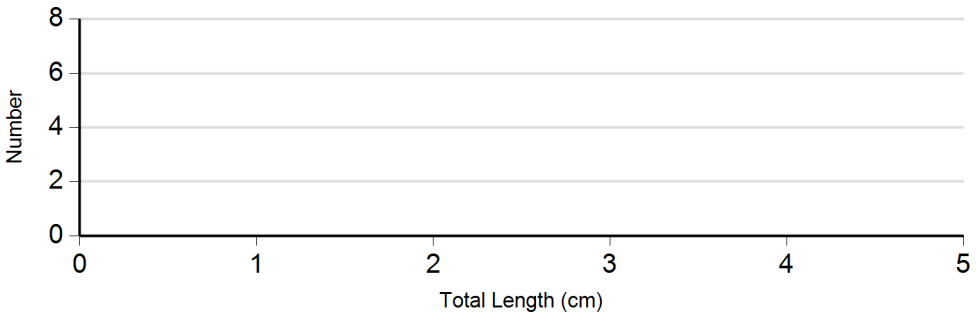


2018



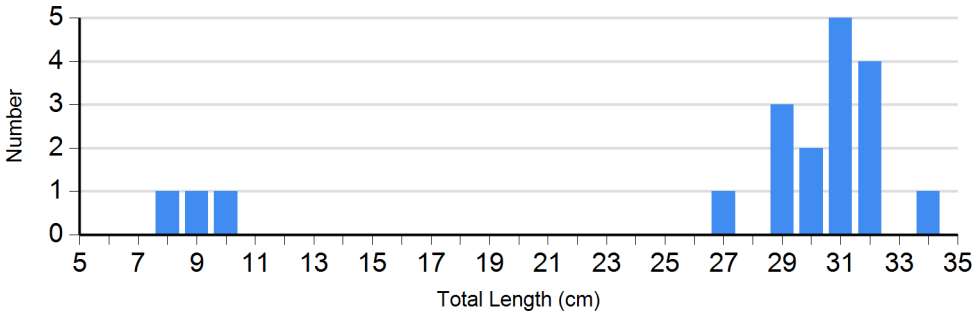
2019

Species: Black Crappie
Gear: AFS std frame net



2017

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



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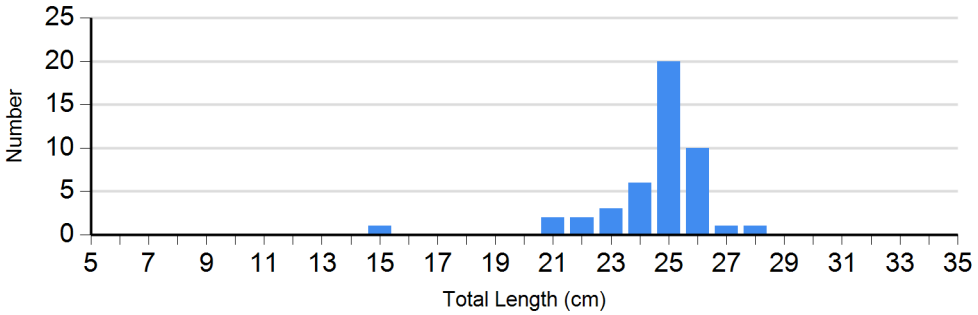
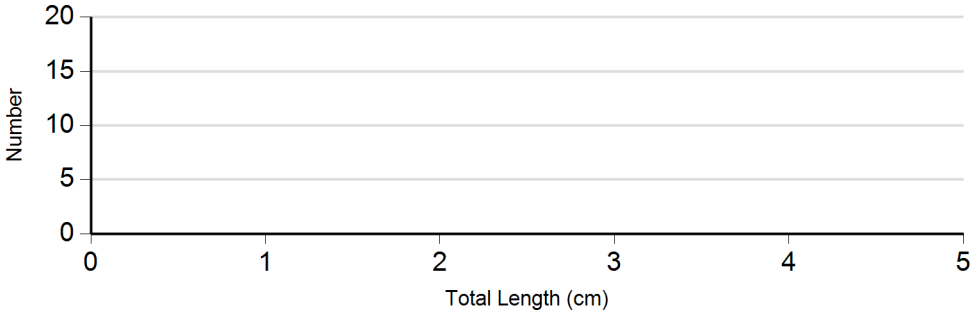


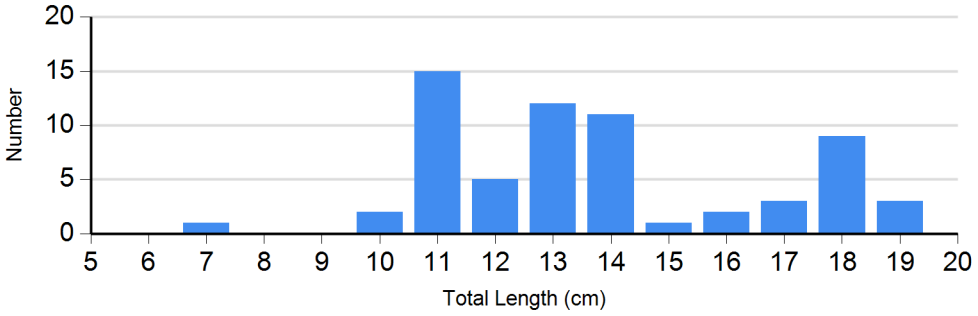
2022

Species: Bluegill
Gear: AFS std frame net



2017

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



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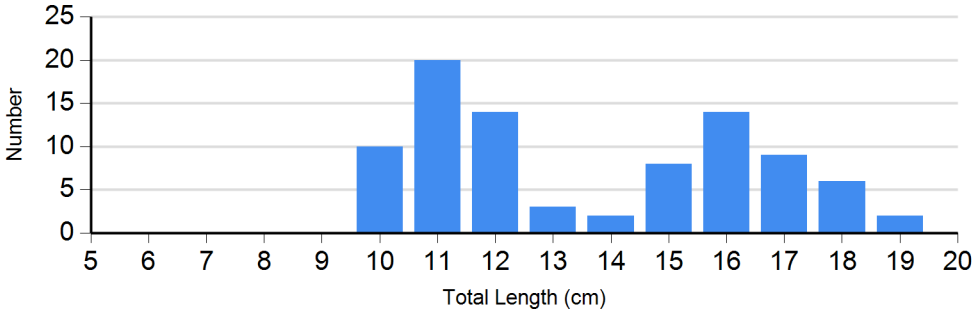

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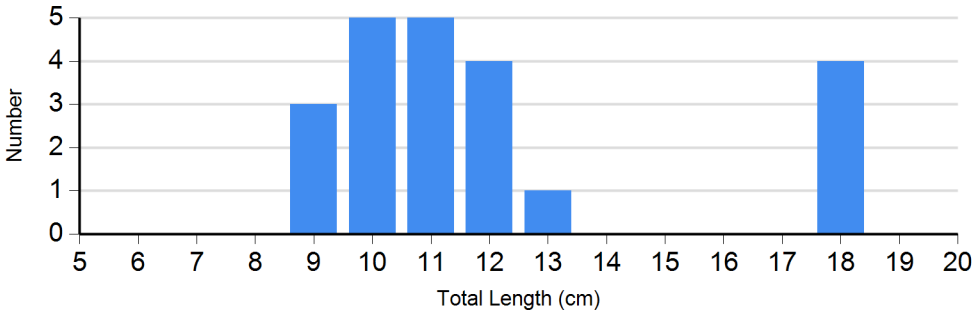
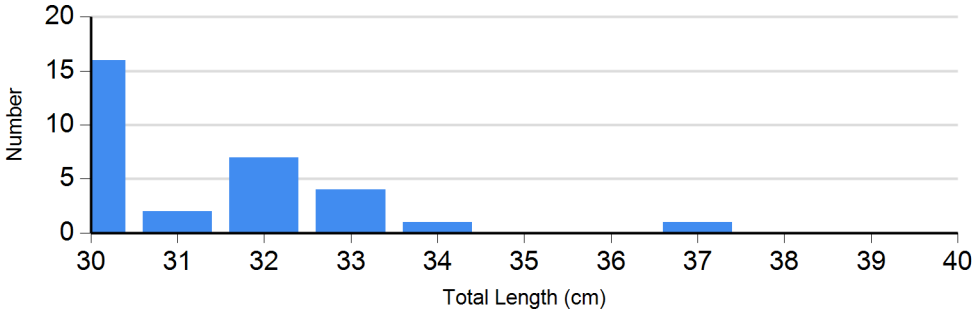
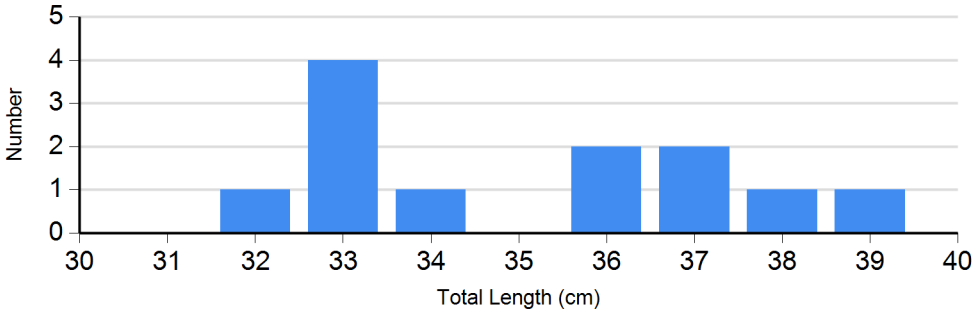


2022

Species: Channel Catfish
Gear: AFS std gill net

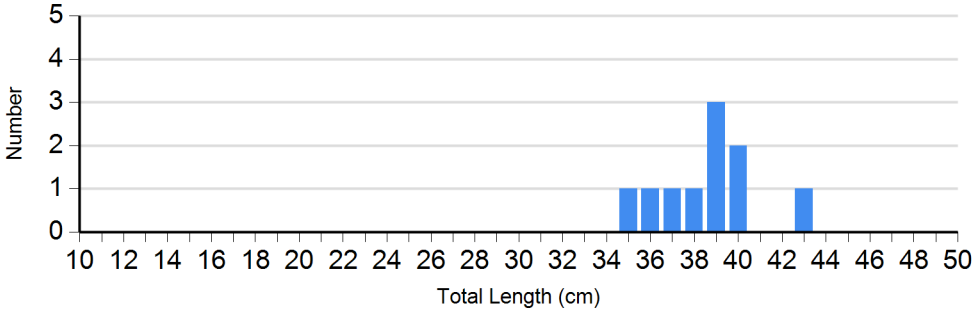


2018

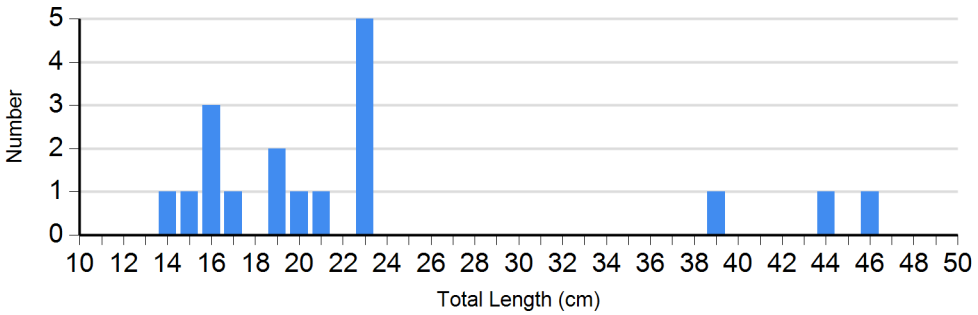


2019

Species: Common Carp
Gear: AFS std gill net

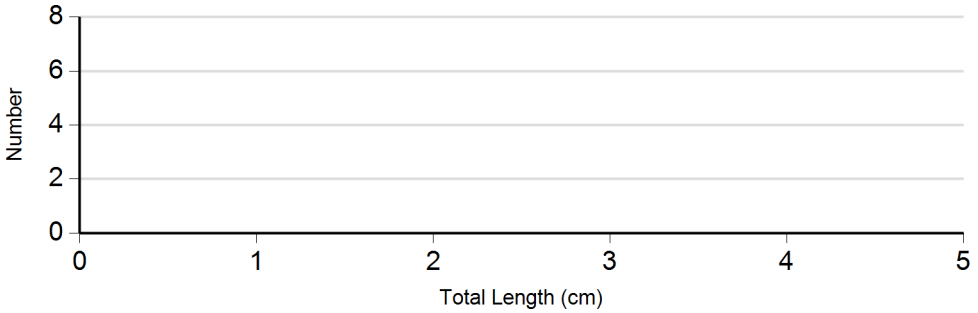


2018



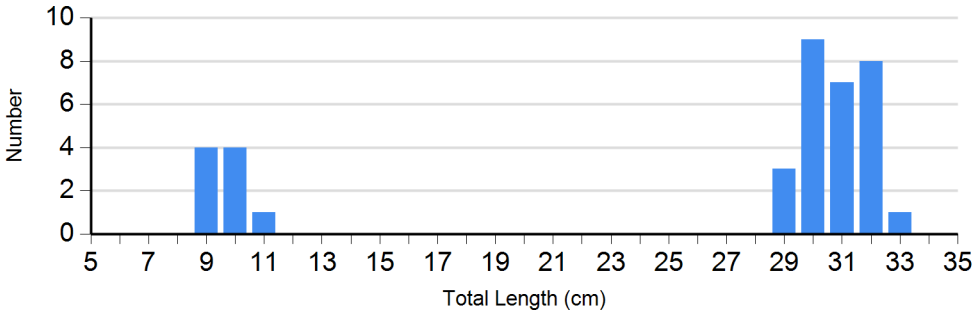
2019

Species: White Crappie
Gear: AFS std frame net

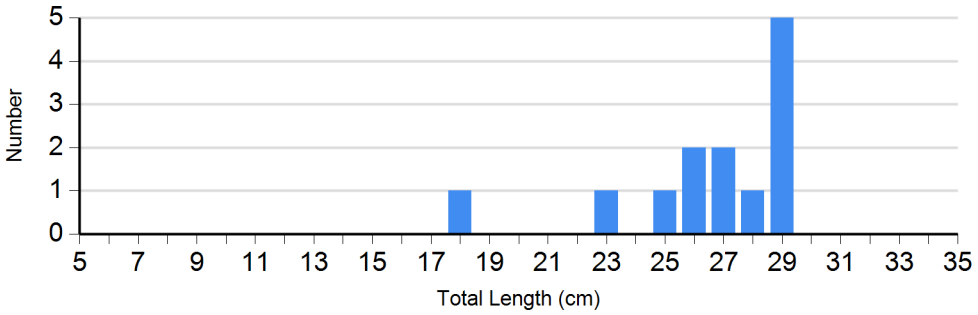


2017

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



2019

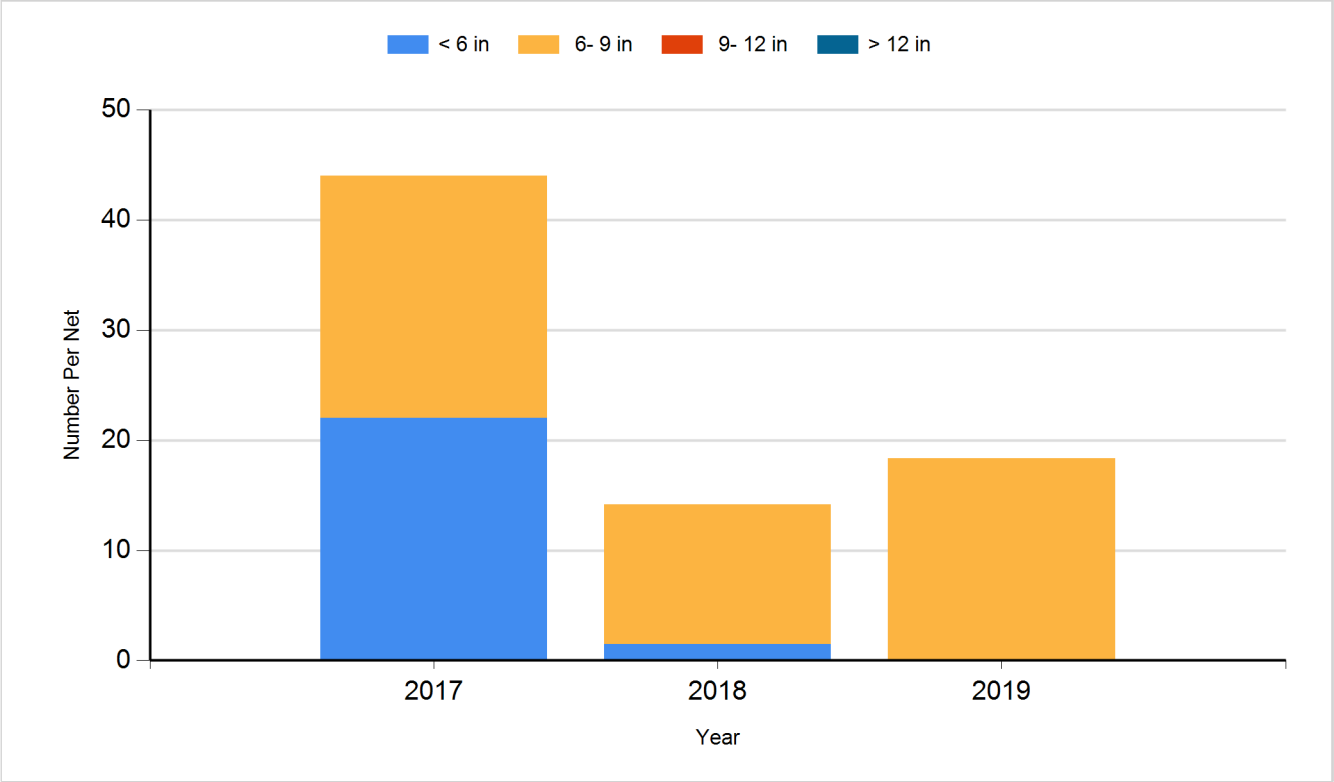


2022

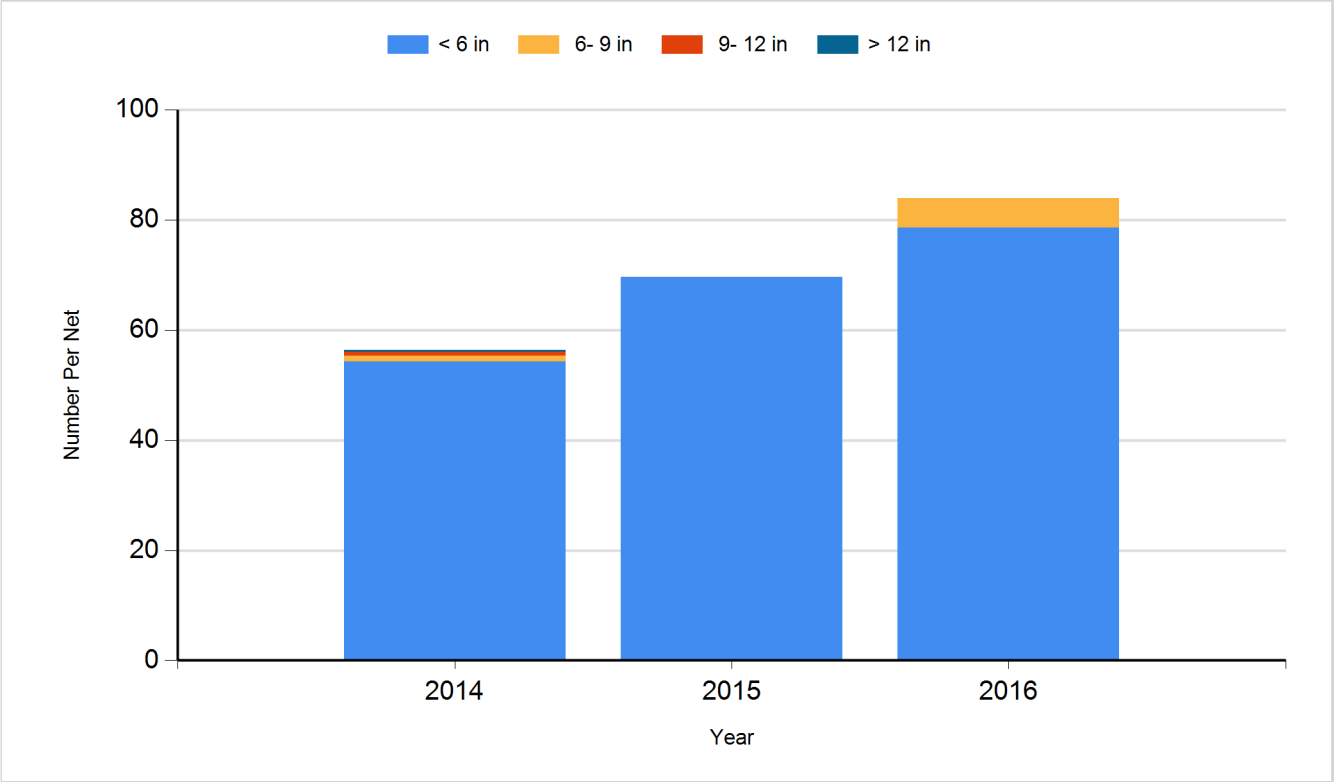
Historic Fish Sizes and Relative Abundance

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

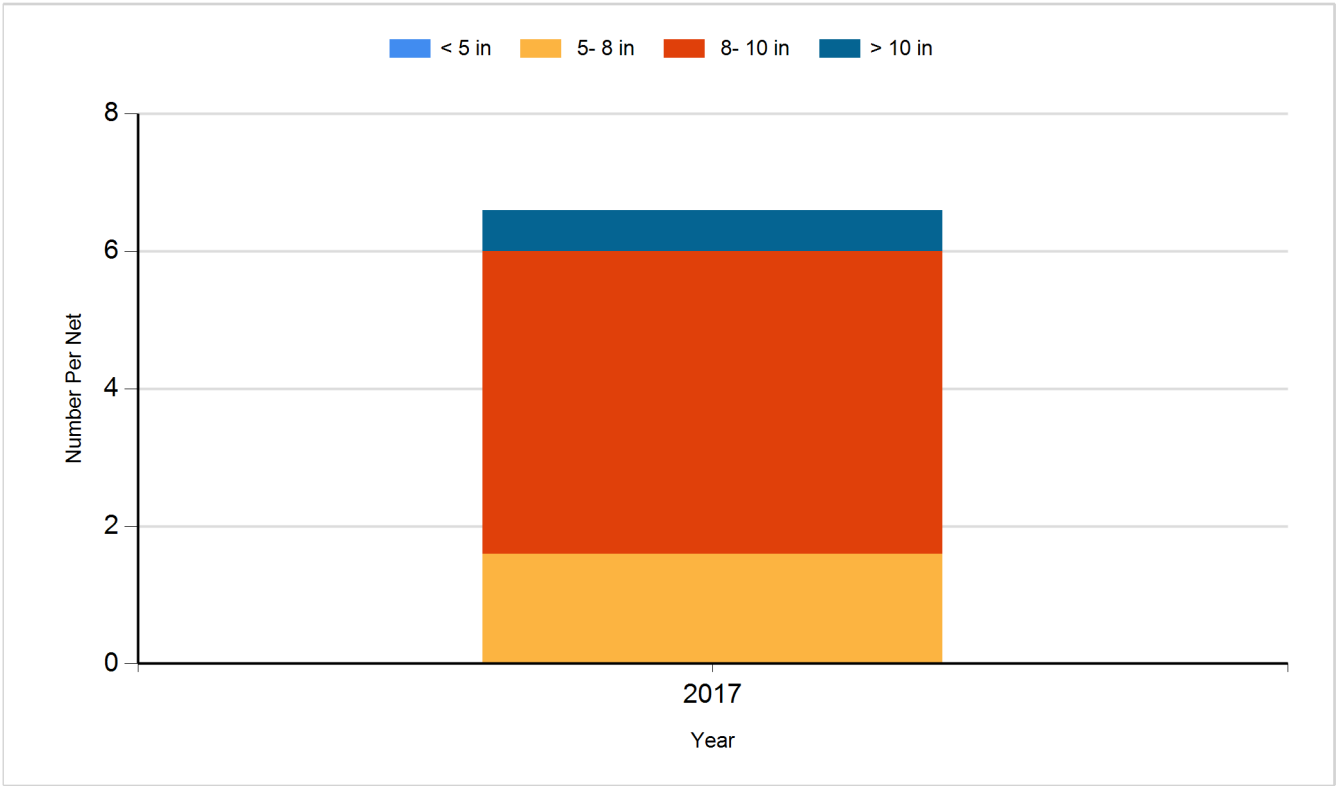
Species: Black Bullhead
Gear: AFS std gill net



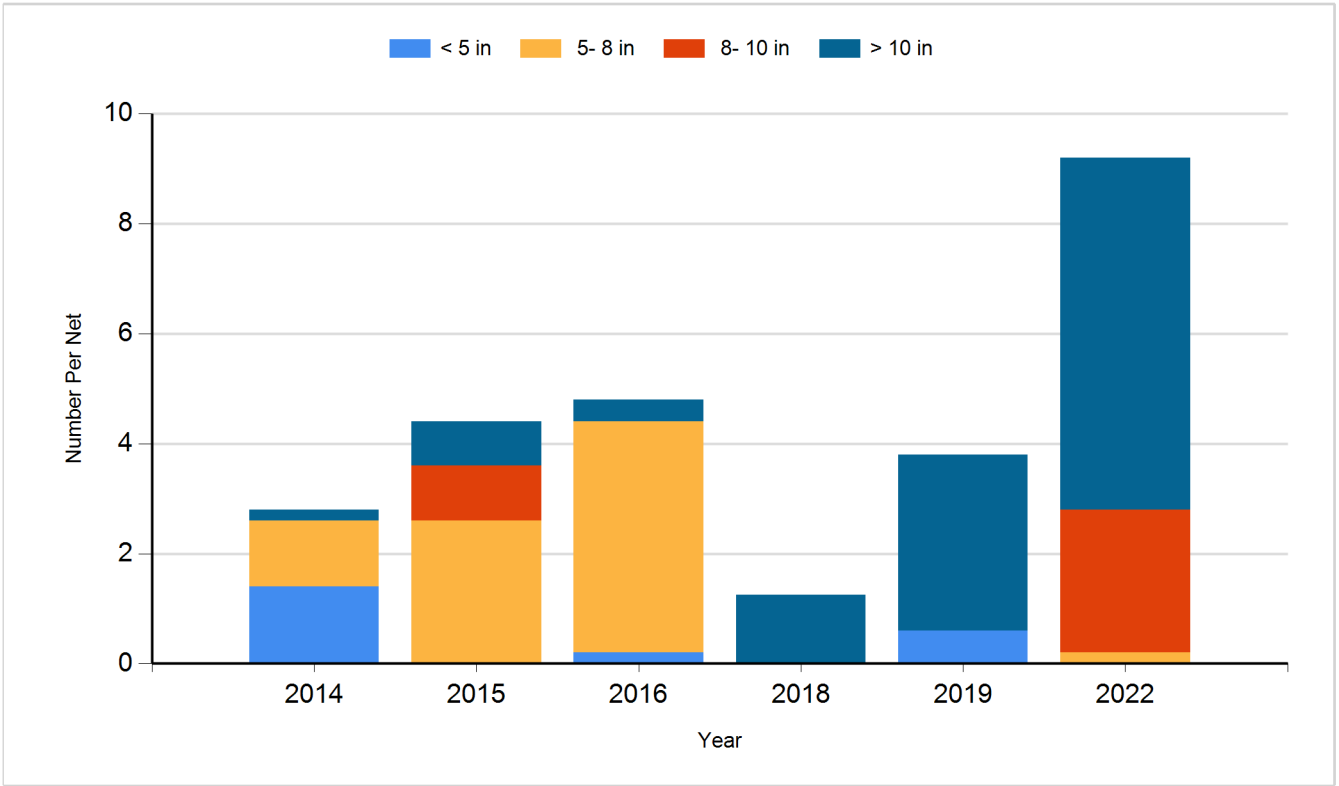
Species: Black Bullhead
Gear: std exp gill net



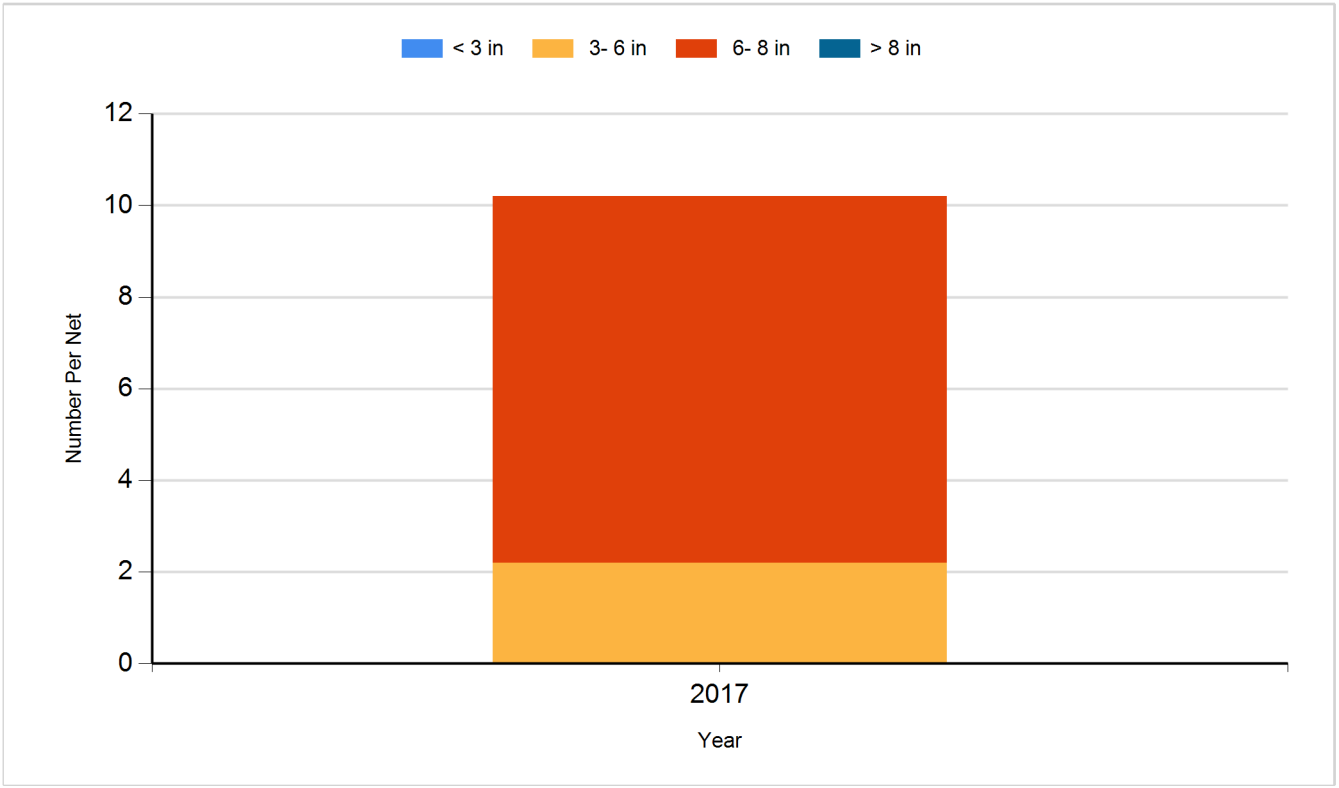
Species: Black Crappie
Gear: AFS std frame net



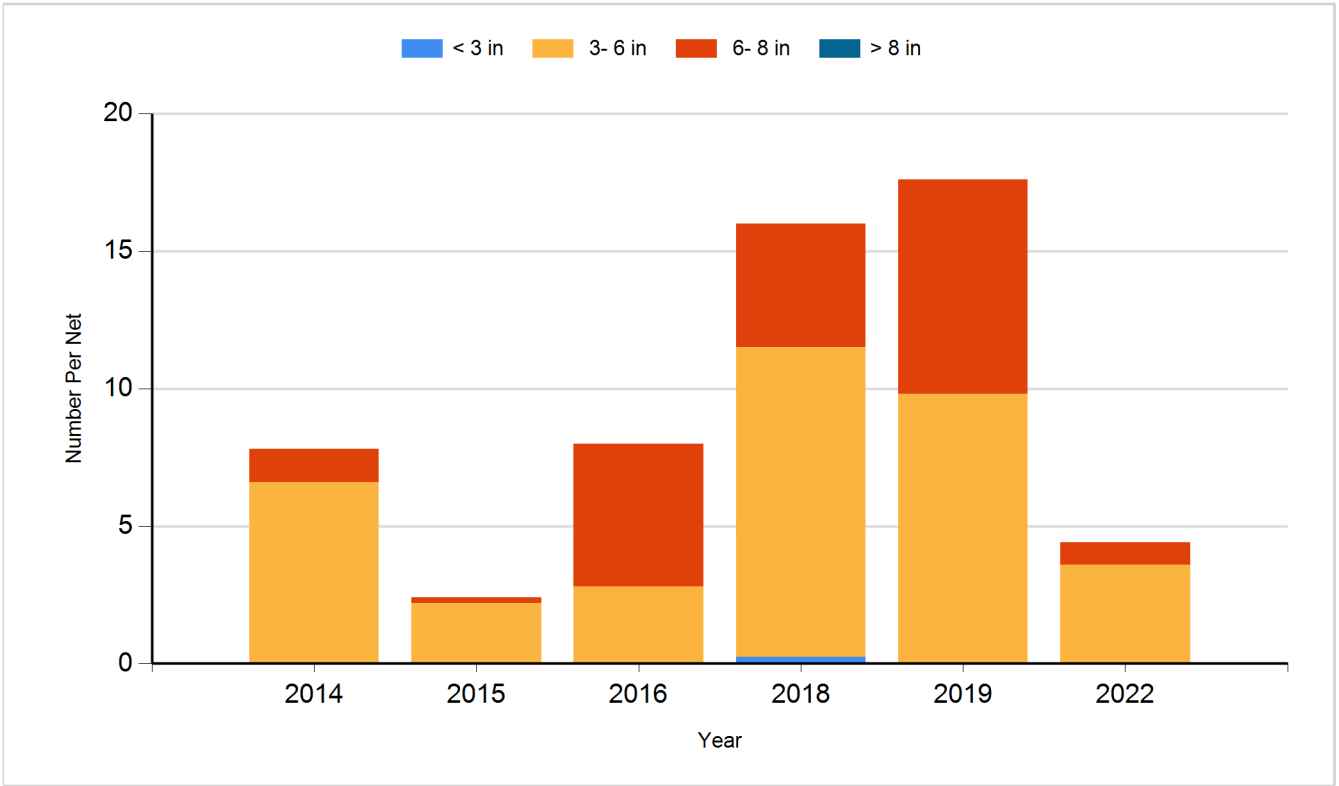
Species: Black Crappie
Gear: frame net (std 3/4 in)



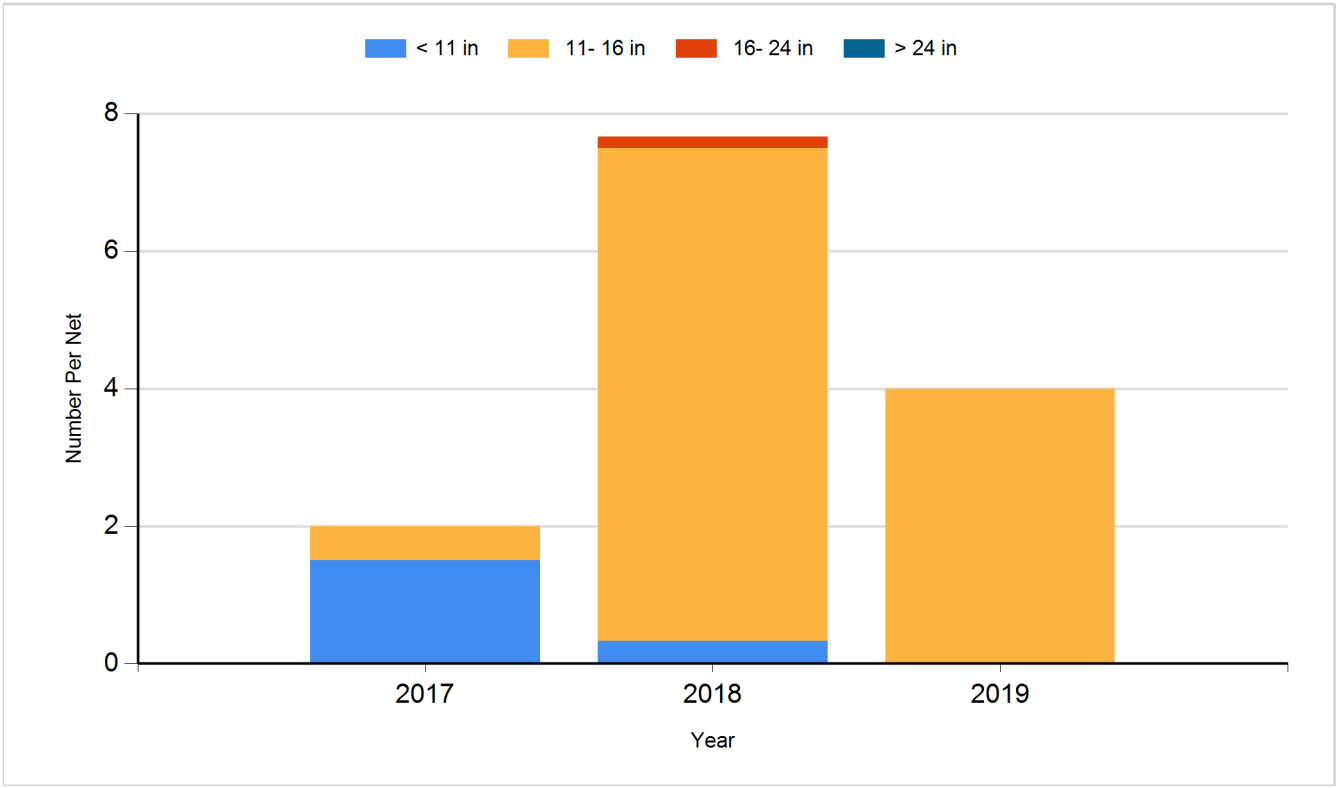
Species: Bluegill
Gear: AFS std frame net



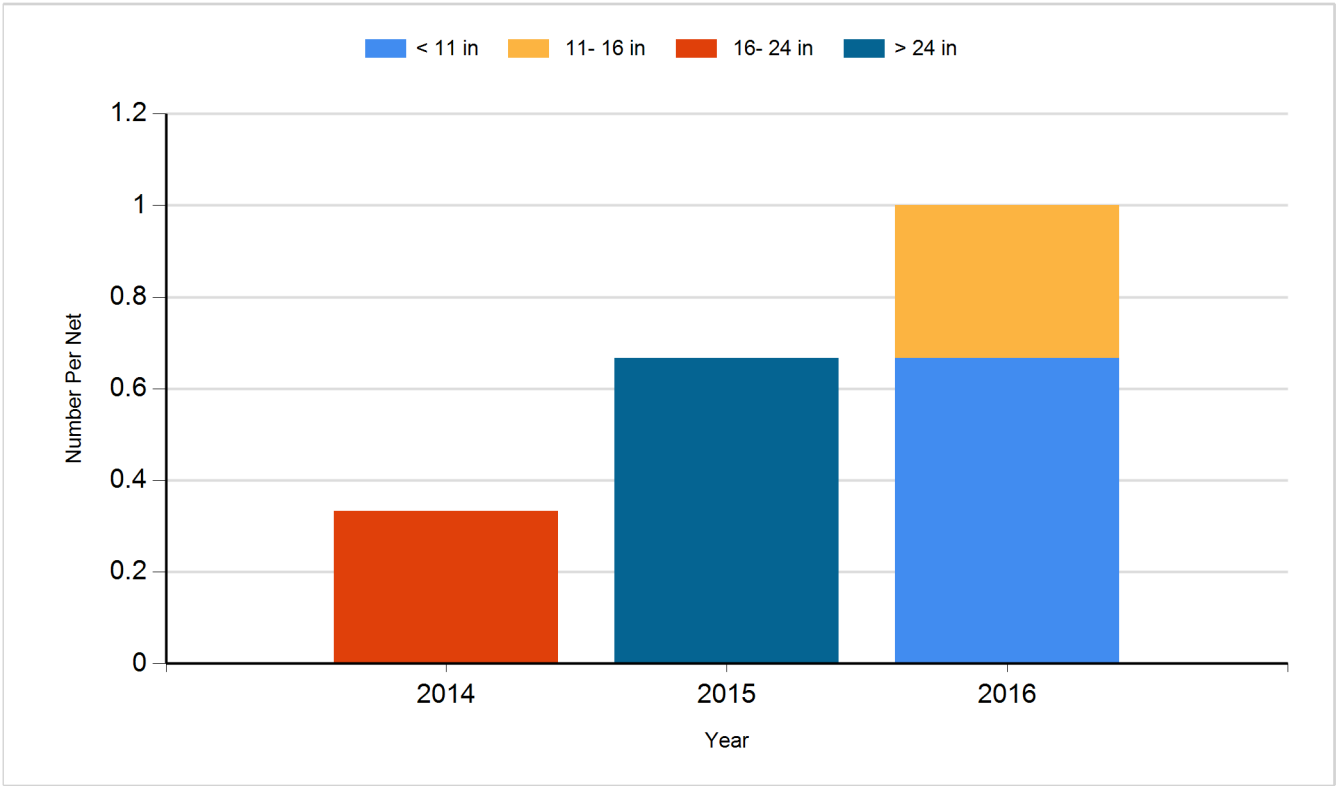
Species: Bluegill
Gear: frame net (std 3/4 in)



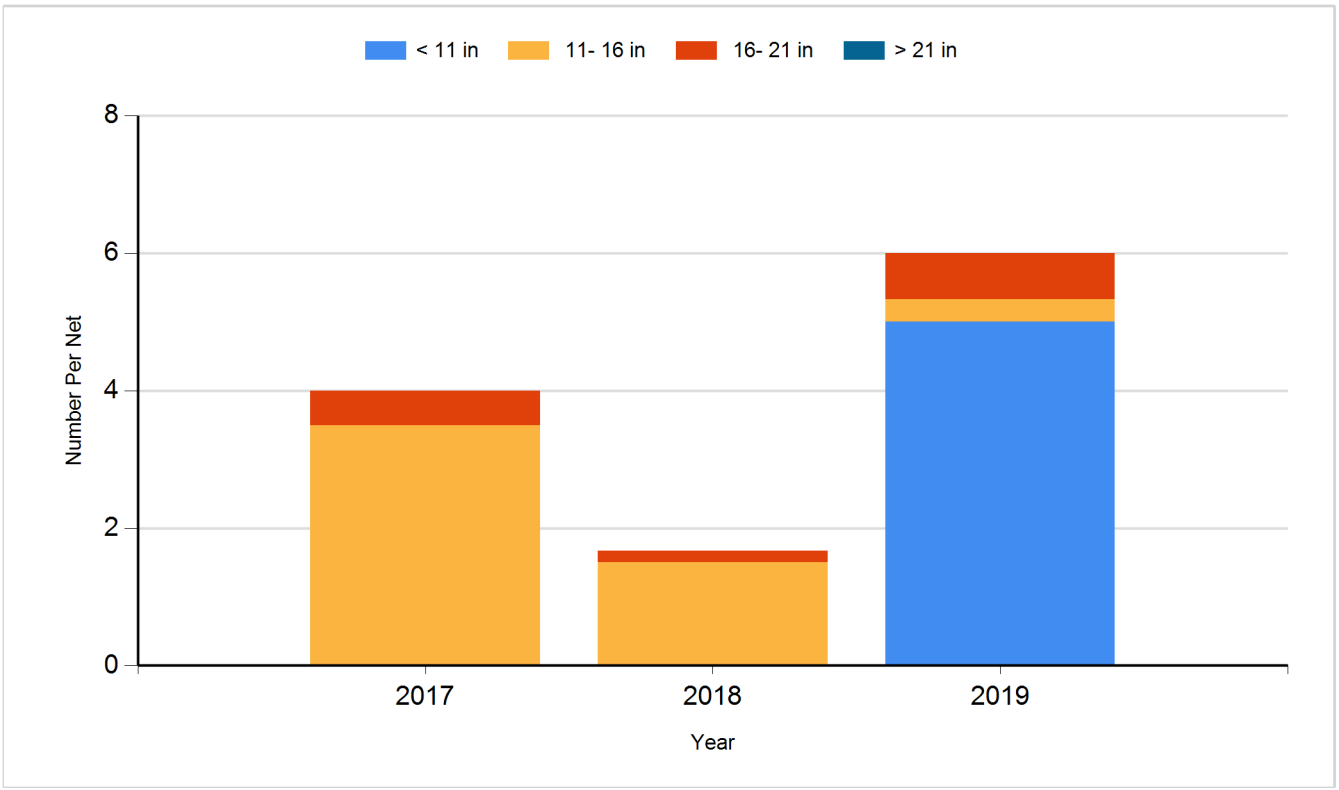
Species: Channel Catfish
Gear: AFS std gill net



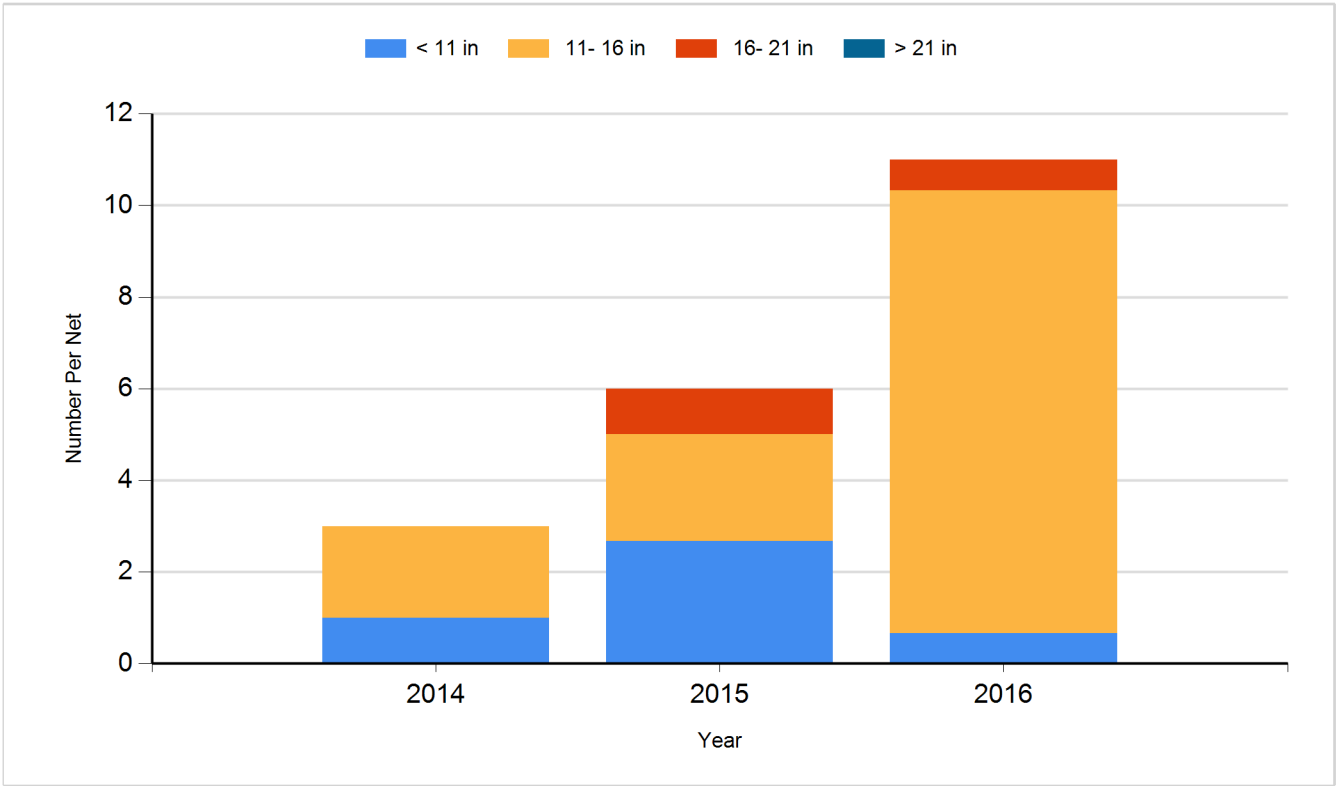
Species: Channel Catfish
Gear: std exp gill net



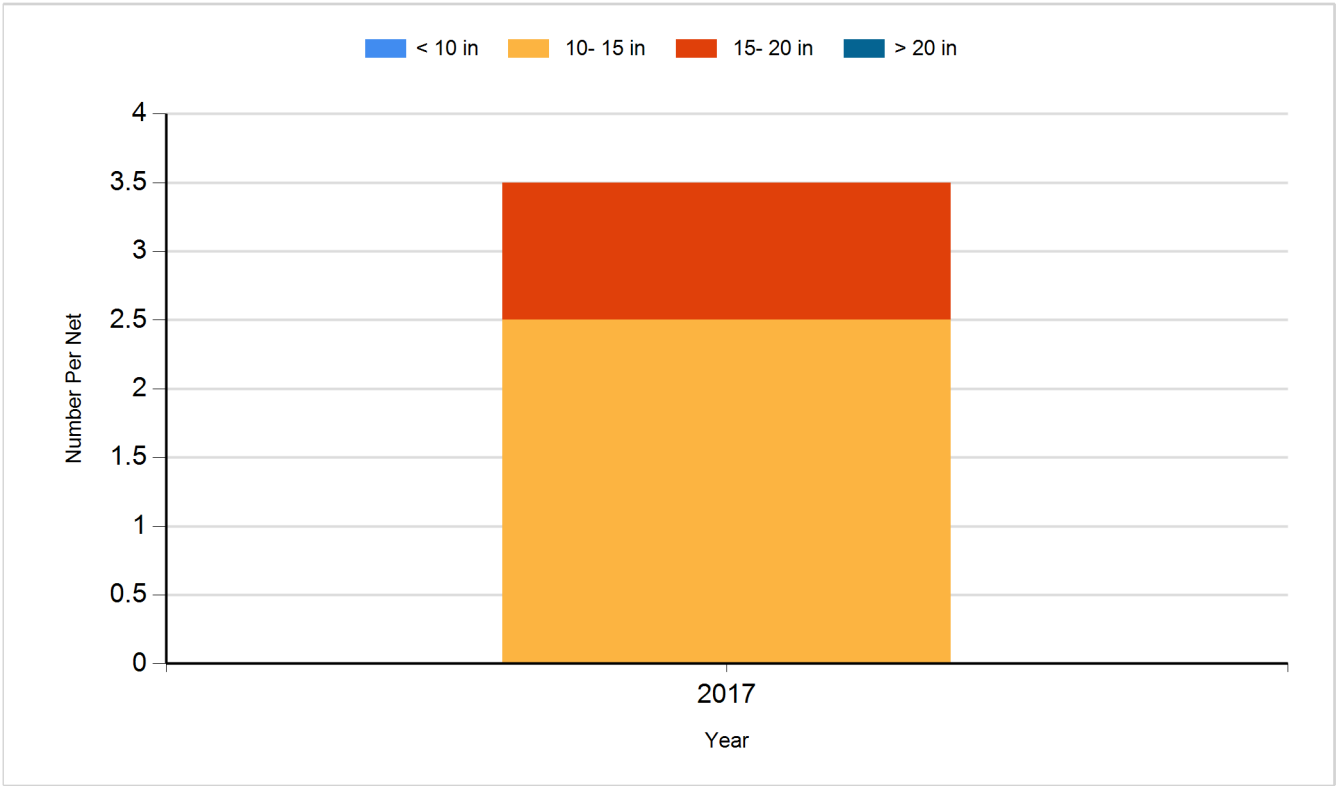
Species: Common Carp
Gear: AFS std gill net



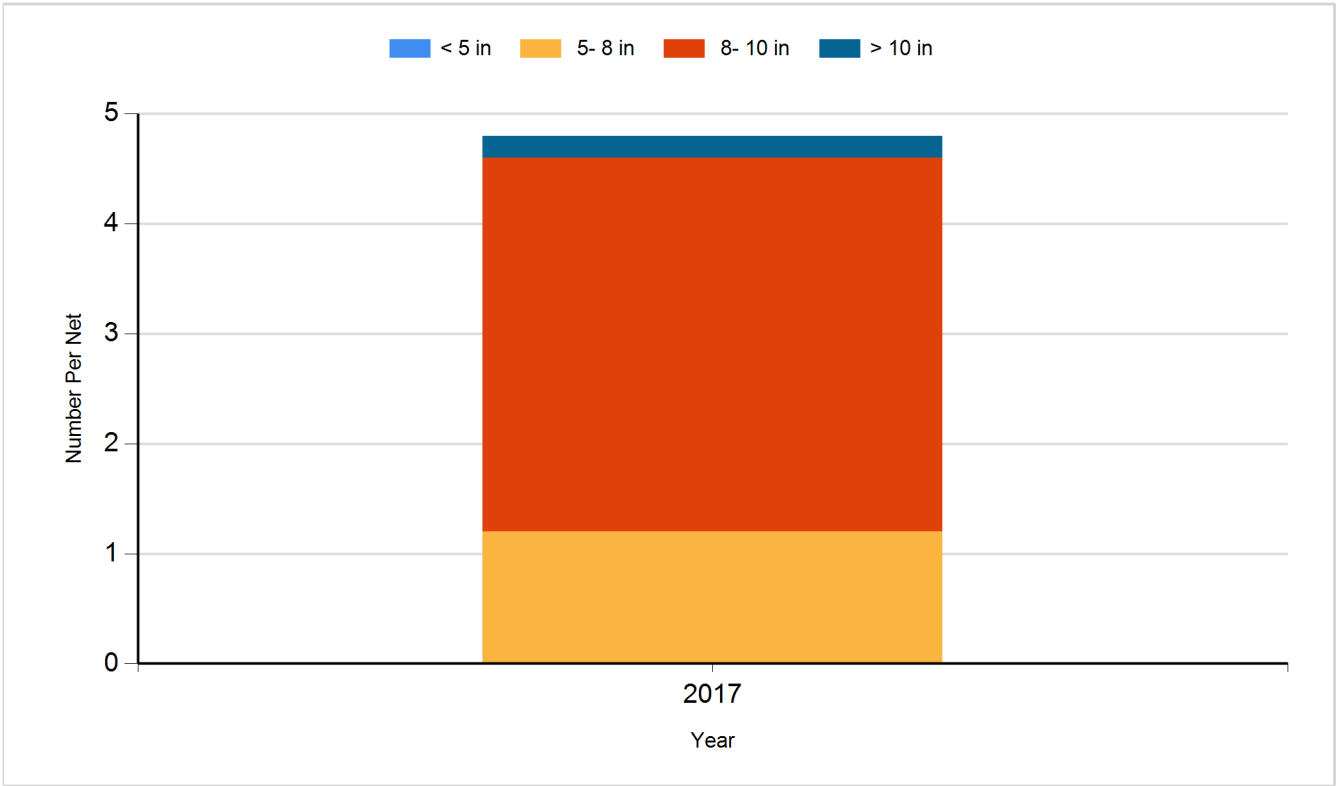
Species: Common Carp
Gear: std exp gill net



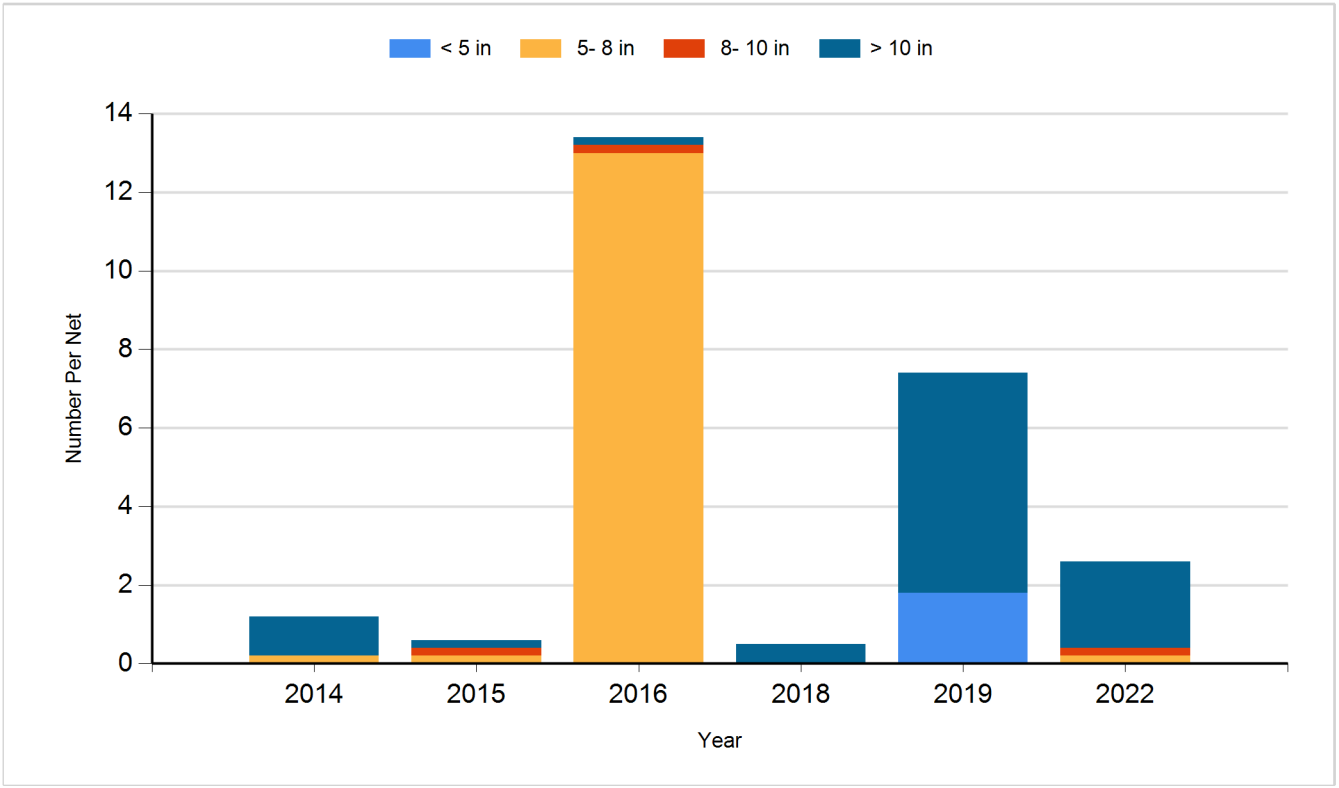
Species: Walleye
Gear: AFS std gill net



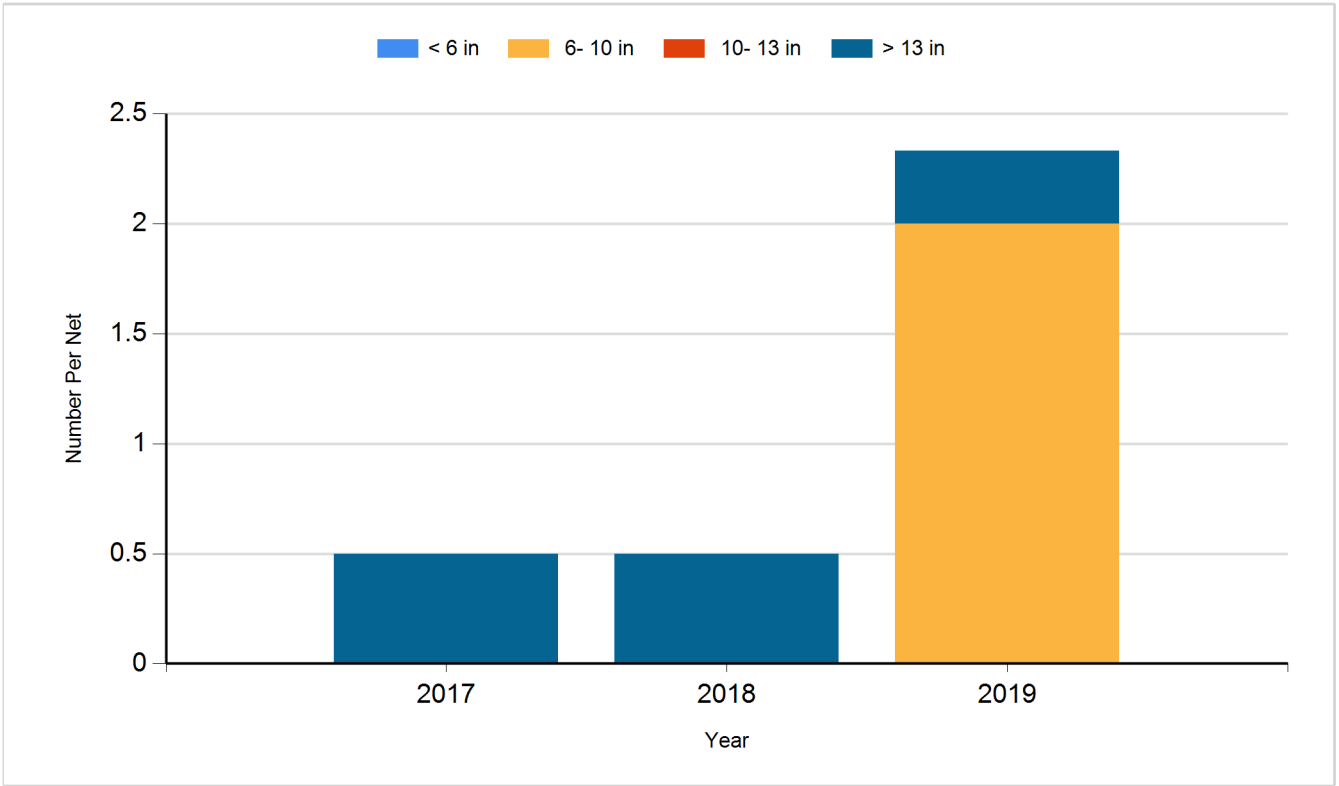
Species: White Crappie
Gear: AFS std frame net



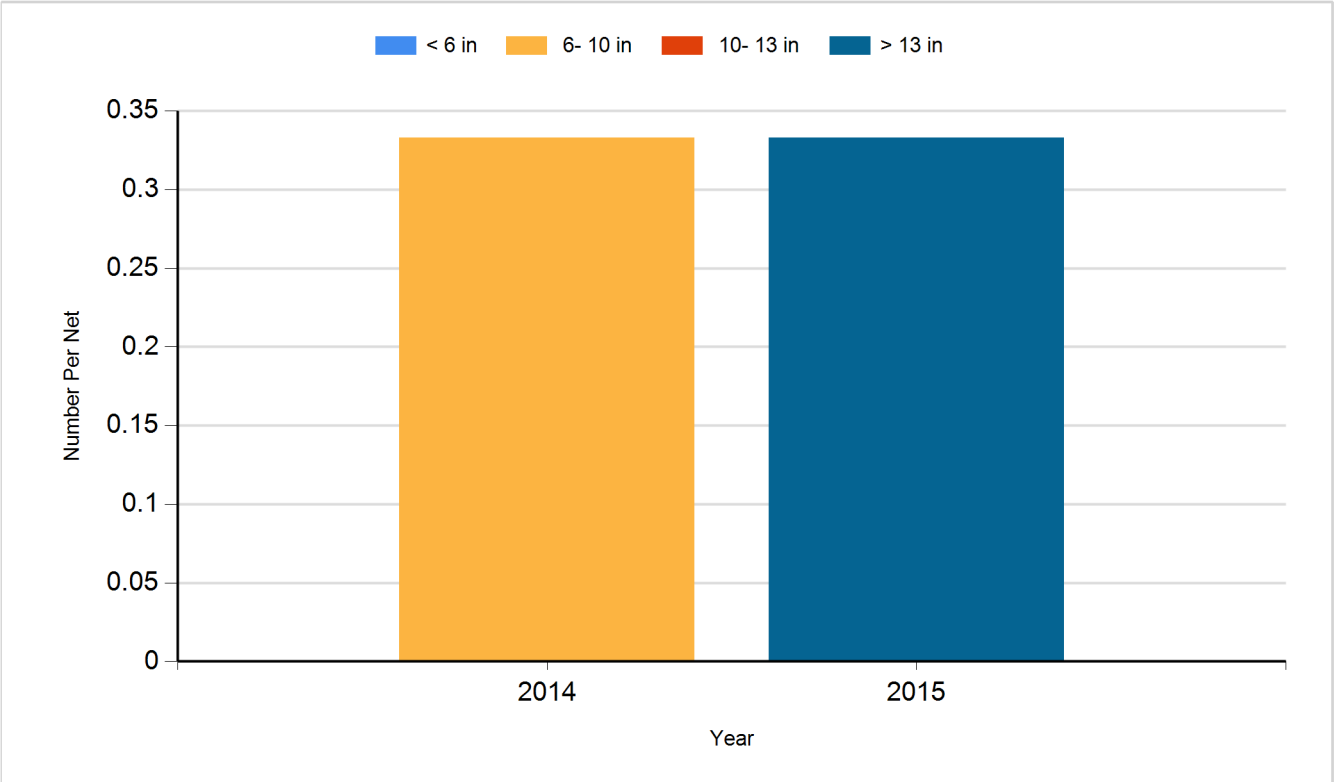
Species: White Crappie
Gear: frame net (std 3/4 in)



Species: White Sucker
Gear: AFS std gill net



Species: White Sucker
Gear: std exp gill net



Fish Stocking

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

Year	Species	Size	Number
2014	Walleye	Fry	55,000
2015	Walleye	Small Fingerling	3,840
2016	Gizzard Shad	Adult	130
2016	Walleye	Juvenile	505
2019	Walleye	Small Fingerling	4,900
2021	Black Crappie	Adult	440
2022	Saugeye	Juvenile	5,320