

# SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

Dimock, Hutchinson County

LJA-Lake-34-000

2022

## Lake Information

**Name:** Dimock **Maximum Depth:** 18 Feet  
**County:** Hutchinson **Mean Depth:** 6 Feet  
**Legal Description:** T100N-R60W-Sec. 15  
**Surface Area:** 93 Acres

## Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jun 14, 2022	4 net-nights
frame net (std 3/4 in)	Jun 14, 2022	5 net-nights

## **Common Fish Species Present**

Walleye

Black Bullhead

Common Carp

Black Crappie

Green Sunfish

Channel Catfish

Yellow Perch

Bluegill

Orangespotted Sunfish

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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
AFS std gill net	Black Bullhead	204	47.5	11.4	1		0		
	Black Crappie	1	0.3	0.4	100		0	90	
	Common Carp	134	32.8	4.2	14	4	0		
	Walleye	1	0.3	0.4	100		0	98	
	Yellow Perch	2	0.5	0.5	0		0	95	7
frame net (std 3/4 in)	Black Bullhead	1300	239.8	71.5	1	0	0		
	Black Crappie	119	23.8	22.0	25	6	2	101	2
	Bluegill	1	0.2	0.3	100		100	134	
	Channel Catfish	3	0.6	0.9	100		67	113	9
	Common Carp	57	11.4	8.0	12	7	0		
	Green Sunfish	35	7.0	4.5	11		0	91	
	Orangespotted Sunfish	2	0.0	0.0					
	Walleye	1	0.2	0.3	100		0	96	
	Yellow Perch	2	0.4	0.6	0		0	82	2

## 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	
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		
AFS std frame net	Black Bullhead					32.6							32.60
	Black Crappie					0.8							0.80
	Common Carp					1.0							1.00
	Green Sunfish					0.8							0.80
	Orangespotted Sunfish					0.0							0.00
	Yellow Perch					0.6							0.60
AFS std gill net	Black Bullhead					53.3	39.2	24.5			47.5		41.13
	Black Crappie					0.3	0.2	0.0			0.3		0.20
	Channel Catfish					1.0	0.0	0.5			0.0		0.38
	Common Carp					11.0	6.3	5.3			32.8		13.85
	Gizzard Shad					1.0	0.0	0.0			0.0		0.25
	Green Sunfish					0.0	0.5	0.0			0.0		0.13
	Walleye					5.3	2.0	0.5			0.3		2.03
	Yellow Perch					0.3	0.2	0.3			0.5		0.33
frame net (std 3/4 in)	Black Bullhead	574.9	522.8	415.0	65.8		299.6	166.0			239.8		326.27
	Black Crappie	0.4	2.0	0.2	1.0		6.8	7.4			23.8		5.94
	Bluegill	0.0	0.4	0.0	0.0		0.0	0.0			0.2		0.09
	Channel Catfish	2.5	1.4	0.6	0.4		0.0	0.4			0.6		0.84
	Common Carp	1.4	0.6	1.2	4.2		2.2	0.8			11.4		3.11
	Green Sunfish	0.0	1.0	0.2	0.6		2.0	0.6			7.0		1.63
	Orangespotted Sunfish	0.0	0.0	0.0	0.0		0.0	0.0			0.0		0.00
	Sunfish Hybrid	0.0	0.2	0.0	0.0		0.0	0.0			0.0		0.03
	Walleye	0.1	0.2	0.0	0.2		0.0	0.0			0.2		0.10
	White Crappie	0.0	0.0	0.0	0.0		0.0	0.0			0.0		0.00
	Yellow Perch	2.7	0.8	1.2	0.4		0.2	1.0			0.4		0.96
std exp gill net	Black Bullhead		80.3	48.3	1.7								43.43
	Black Crappie		0.3	2.3	0.0								0.87
	Channel Catfish		1.3	2.3	0.0								1.20
	Common Carp		2.7	3.0	0.3								2.00
	Gizzard Shad		0.0	0.0	0.3								0.10
	Green Sunfish		0.0	0.3	0.3								0.20
	Orangespotted Sunfish		0.0	0.0	0.0								0.00
	Walleye		2.0	9.3	3.7								5.00

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CPUE

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Gear	Species	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Avg
std exp gill net	Yellow Perch		4.3	24.0	1.7							10.00

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## 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										
			2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
AFS std frame net	Black Bullhead	PSD					0						
		PSD-P					0						
		Wr					215						
	Black Crappie	PSD					25						
		PSD-P					25						
		Wr											
	Common Carp	PSD					40						
		PSD-P					20						
		Wr											
	Green Sunfish	PSD					25						
		PSD-P					0						
		Wr											
Yellow Perch	PSD					100							
	PSD-P					33							
	Wr					83							
AFS std gill net	Black Bullhead	PSD					0	0	0				1
		PSD-P					0	0	0				0
		Wr					107	103					90
	Black Crappie	PSD					100	100					100
		PSD-P					100	0					0
		Wr											
	Channel Catfish	PSD					100			0			
		PSD-P					25			0			
		Wr					99			97			
	Common Carp	PSD					16	24	72				14
		PSD-P					2	3	3				0
		Wr											
	Green Sunfish	PSD							0				
		PSD-P							0				
		Wr											
	Walleye	PSD					43	100	0				100
		PSD-P					14	0	0				0
		Wr					92	97	100				98
Yellow Perch	PSD					0	0	0				0	
	PSD-P					0	0	0				0	
	Wr							107	89			95	
frame net (std 3/4 in)	Black Bullhead	PSD	0	0	3	2		1	1			1	
		PSD-P	0	0	0	0		0	0			0	



Gear	Species	Index	Year											
			2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		
frame net (std 3/4 in)	Black Bullhead	Wr	58											
	Black Crappie	PSD	100	70	100	100		56	38				25	
		PSD-P	50	10	100	20		3	24				2	
		Wr	99	123	99	102		98	97				101	
	Bluegill	PSD		0									100	
		PSD-P		0									100	
		Wr		145									134	
	Channel Catfish	PSD	0	86	100	50				0			100	
		PSD-P	0	0	0	0				0			67	
		Wr	72	92	78	89				89			113	
	Common Carp	PSD	86	33	33	29		55	75				12	
		PSD-P	7	0	0	5		27	0				0	
		Wr	71											
	Green Sunfish	PSD		0	100	33		10	33				11	
		PSD-P		0	0	0		0	0				0	
		Wr			109	115			89				91	
	Walleye	PSD	0	0		0							100	
		PSD-P	0	0		0							0	
		Wr	90	96		86							96	
	Yellow Perch	PSD	15	50	50	100		100	40				0	
		PSD-P	0	25	17	0		100	40				0	
		Wr	86	94	89	87		83	76				82	
	std exp gill net	Black Bullhead	PSD		0	0	0							
			PSD-P		0	0	0							
		Black Crappie	PSD		100	100								
			PSD-P		0	29								
			Wr		124	111								
		Channel Catfish	PSD		50	100								
		PSD-P		0	0									
		Wr		99	93									
Common Carp		PSD		63	22	0								
		PSD-P		0	0	0								
Green Sunfish		PSD			100	100								
		PSD-P			0	0								
		Wr			106	108								
Walleye		PSD		67	93	27								
		PSD-P		0	11	0								

Gear	Species	Index	Year									
			2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
std exp gill net	Walleye	Wr		103	89	91						
	Yellow Perch	PSD		23	53	60						
		PSD-P		0	4	20						
		Wr		106	95	79						

## Length at Capture

Mean length at capture by age across years sampled, sample size (N).

Species: Walleye

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2019	3	275 (3)									
2018	12			451 (3)	442 (9)						

Species: Yellow Perch

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2019	2		156 (2)								
2018	1	153 (1)									

## **Fish Condition**

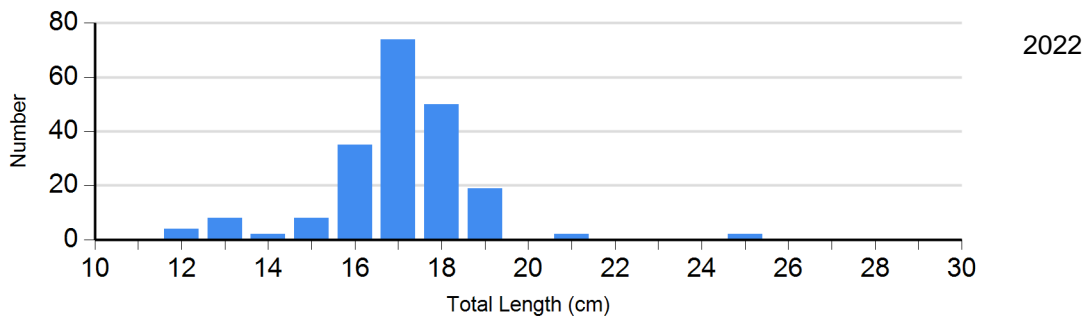
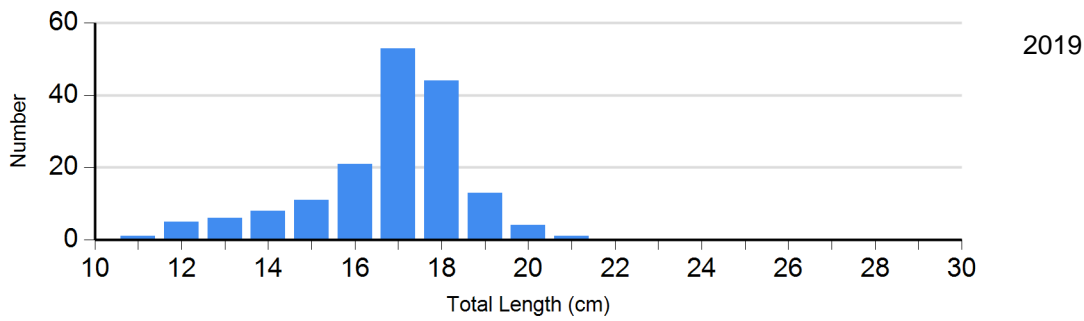
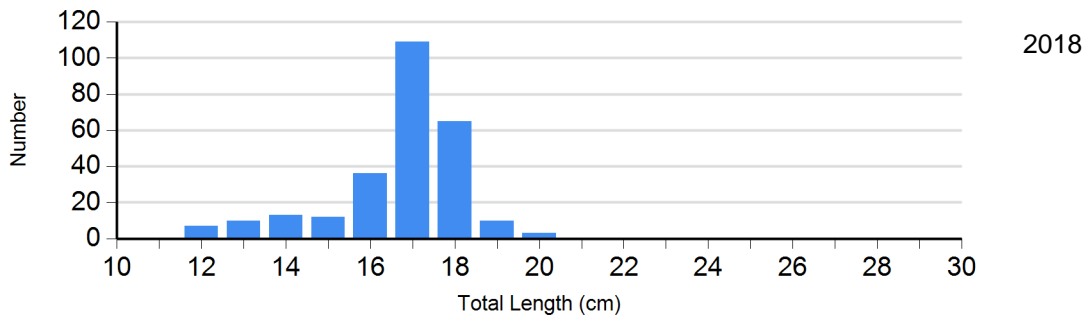
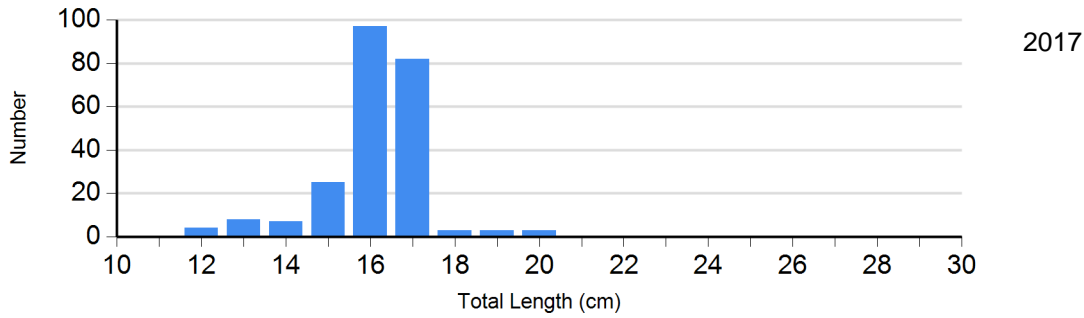
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Black Crappie Frame Net	2018	15	99 (1.6)	18	98 (1.2)	0		1	98
	2019	23	98 (3.1)	5	93 (2.2)	8	97 (1.4)	1	95
	2022	89	103 (1.6)	28	95 (1.7)	2		0	
Bluegill Frame Net	2022	0		0		1	134	0	
Channel Catfish Gill Net	2019	3	97 (5.1)	0		0		0	
Walleye Gill Net	2018	0		12	97 (1.9)	0		0	
	2019	3	100 (2.6)	0		0		0	
	2022	0		1	98	0		0	
Yellow Perch Gill Net	2018	1	107	0		0		0	
	2019	2	89 (1.1)	0		0		0	
	2022	2	95 (5.2)	0		0		0	

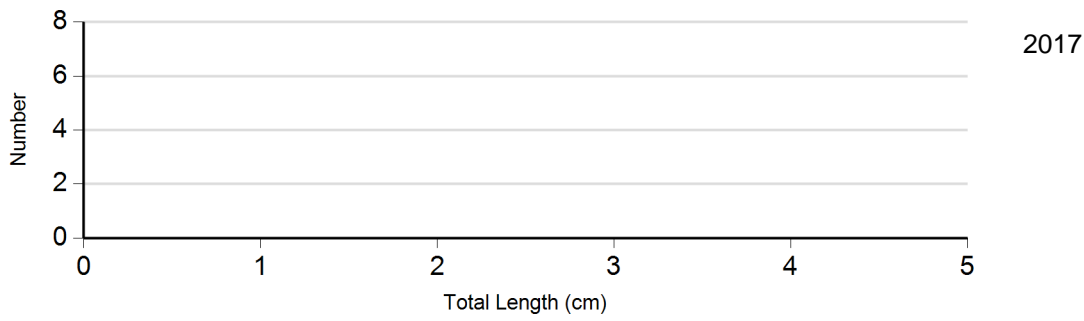
# Length Frequency Distribution

Length frequency histogram of species sampled by year.

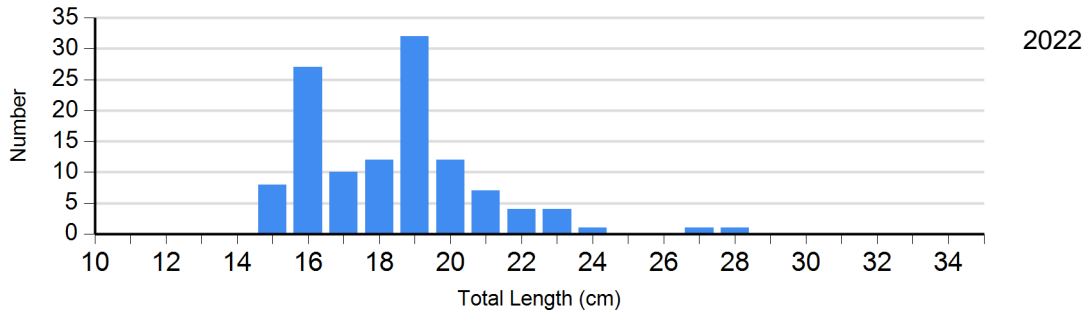
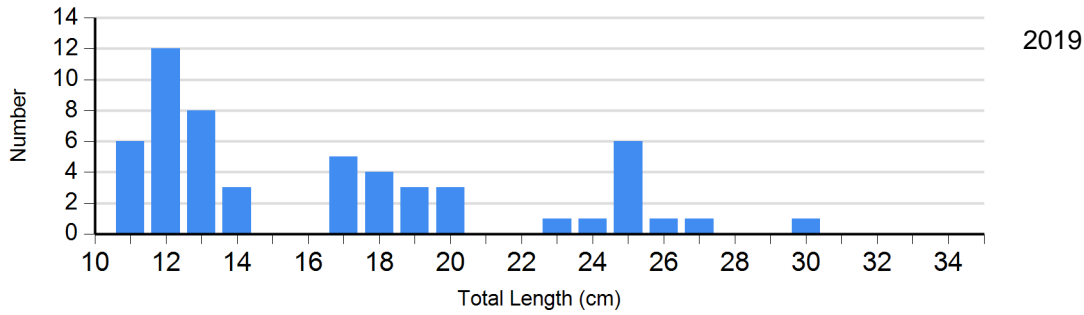
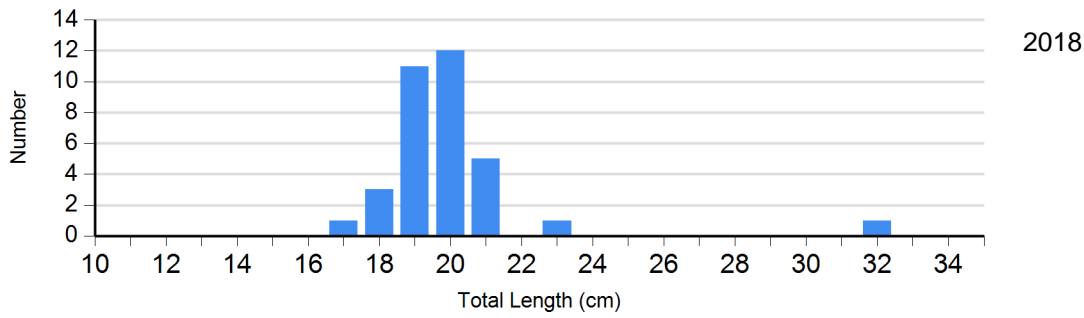
Species: Black Bullhead  
Gear: AFS std gill net



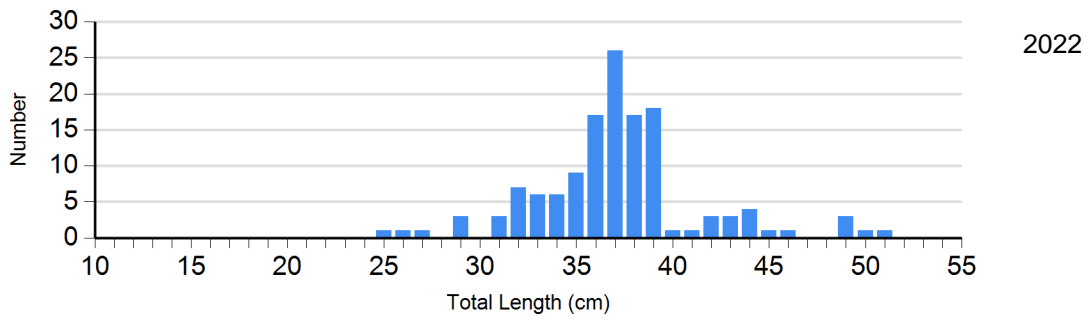
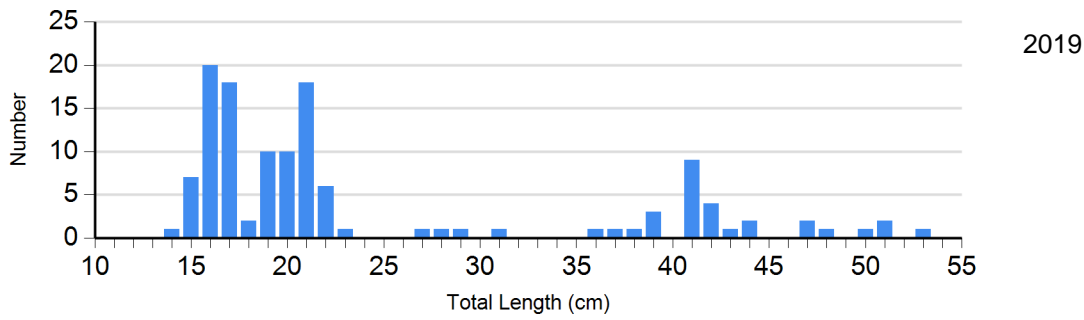
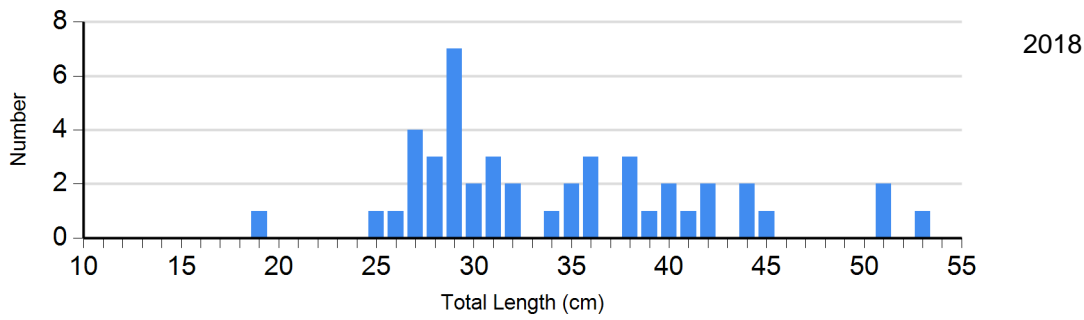
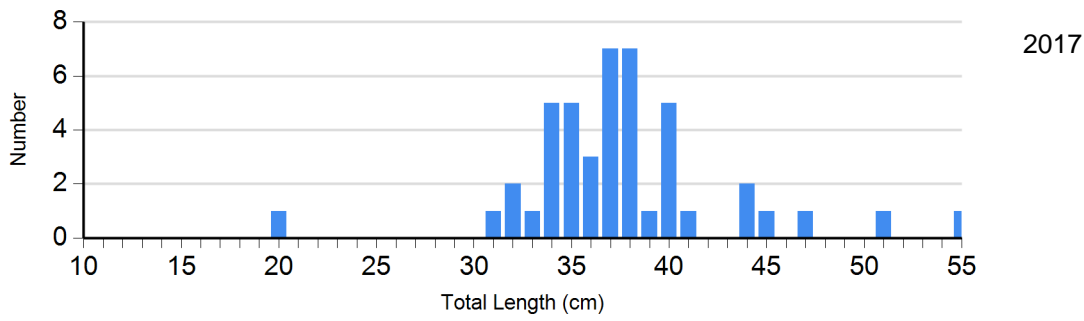
Species: Black Crappie  
Gear: AFS std frame net



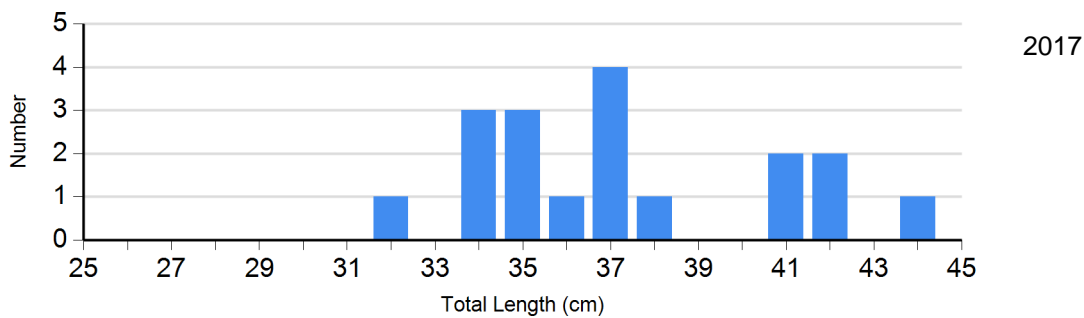
Species: Black Crappie  
Gear: frame net (std 3/4 in)

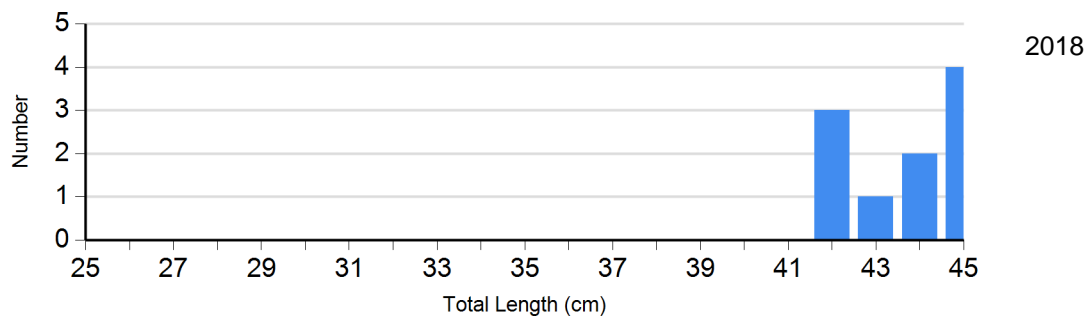


Species: Common Carp  
 Gear: AFS std gill net



Species: Walleye  
 Gear: AFS std gill net



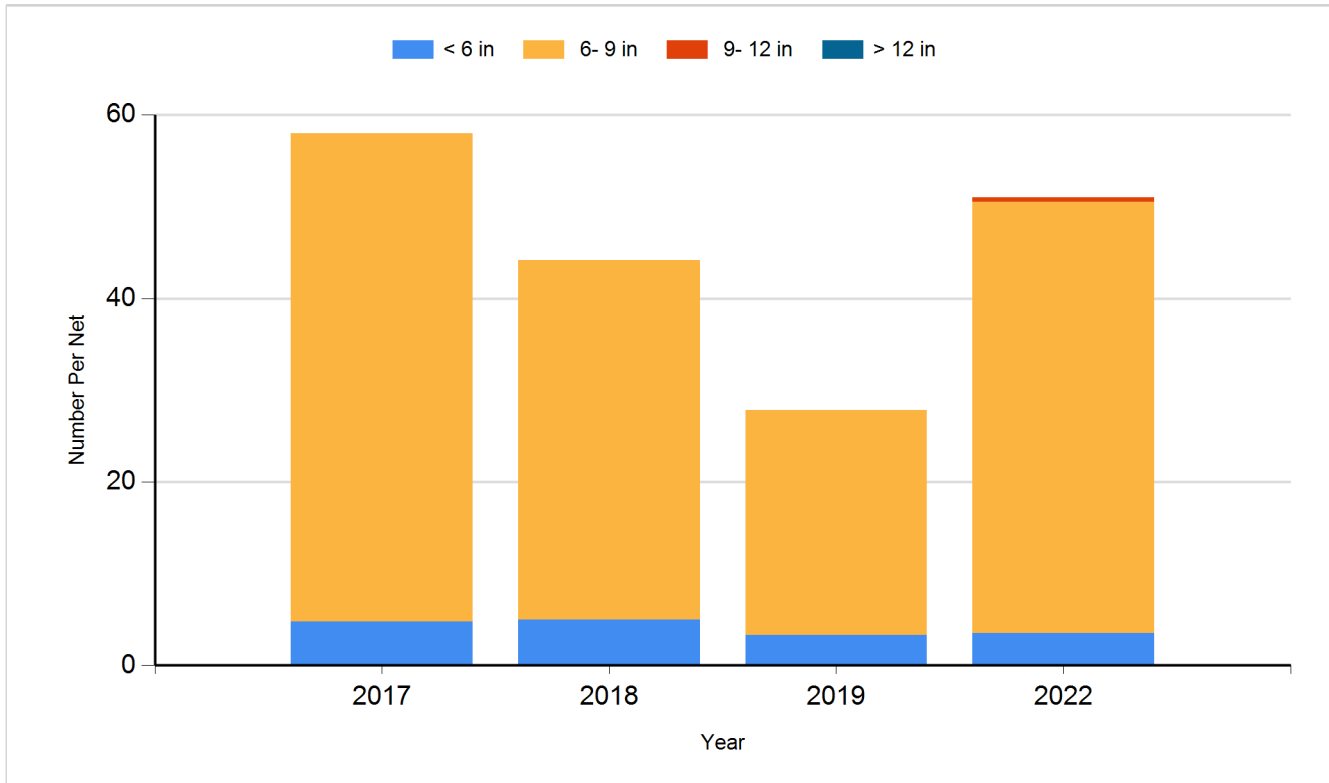




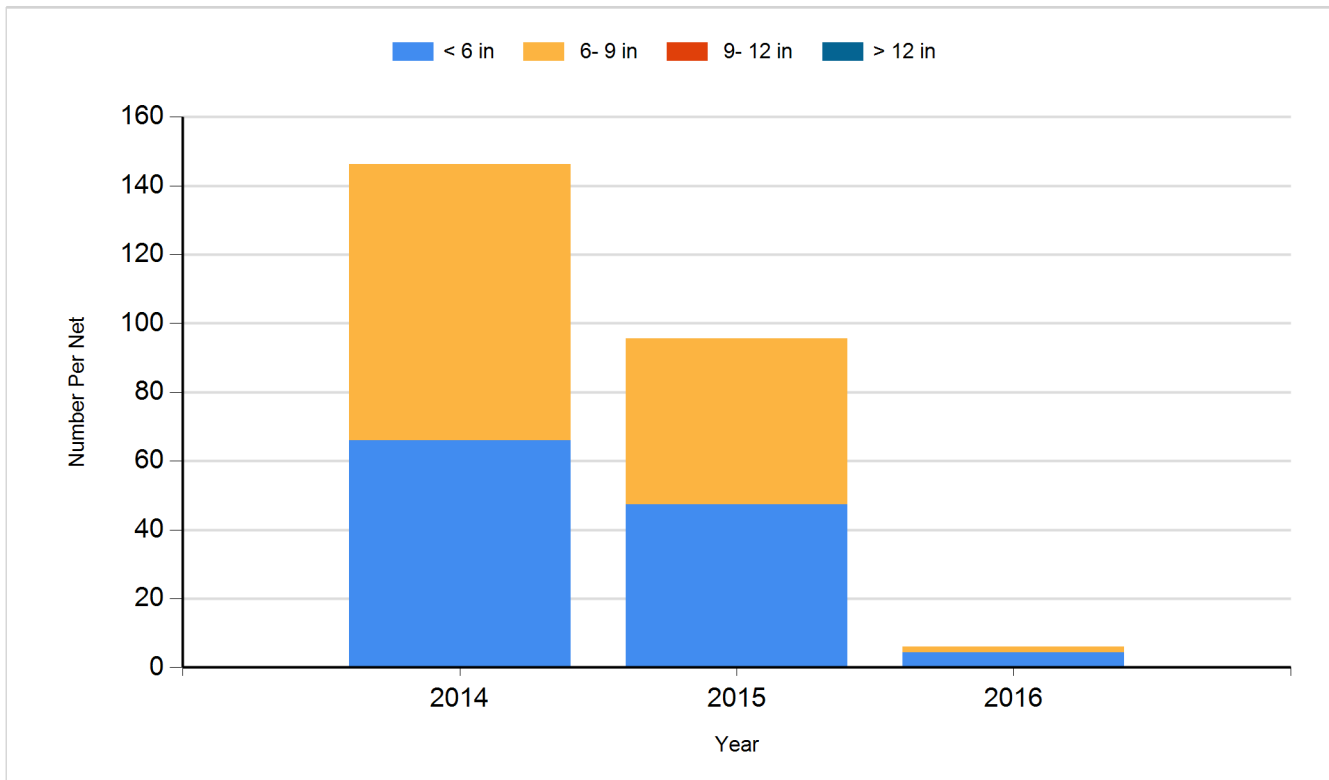
## Historic Fish Sizes and Relative Abundance

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

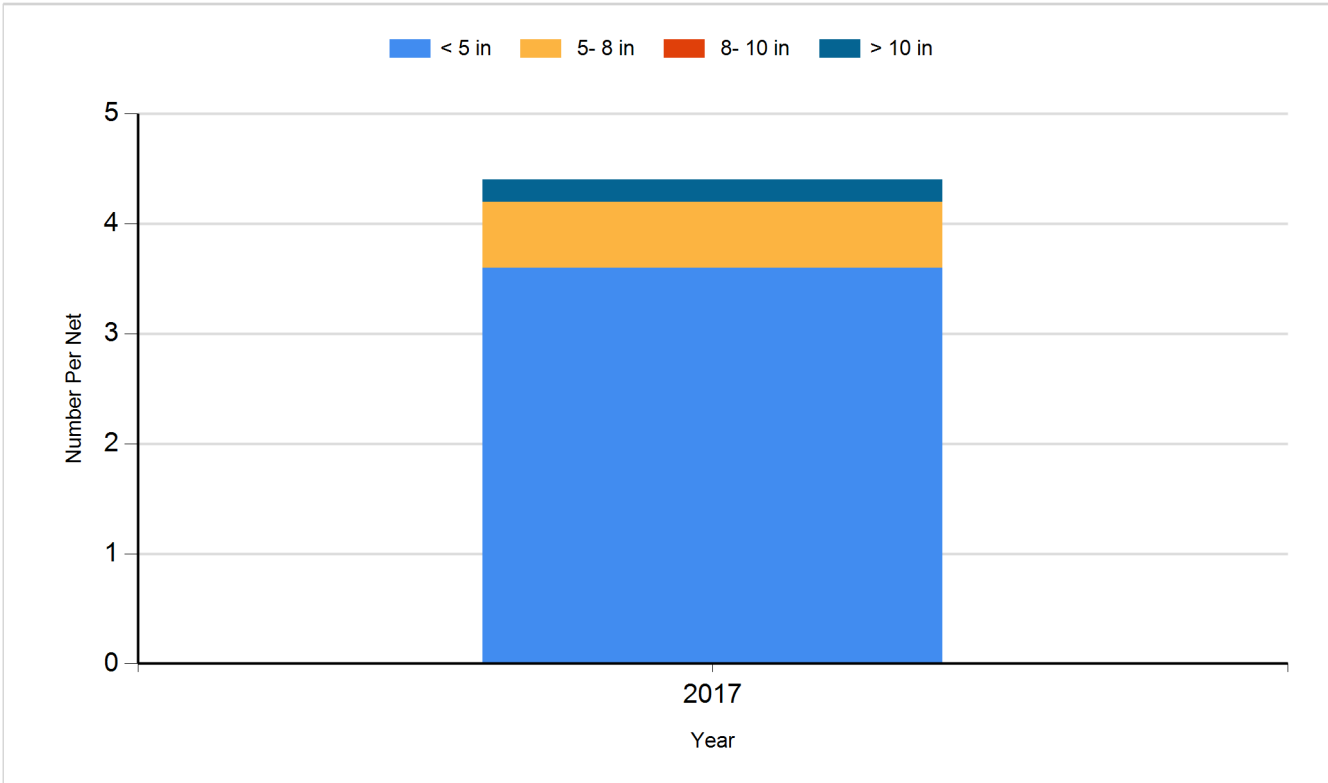
Species: Black Bullhead  
Gear: AFS std gill net



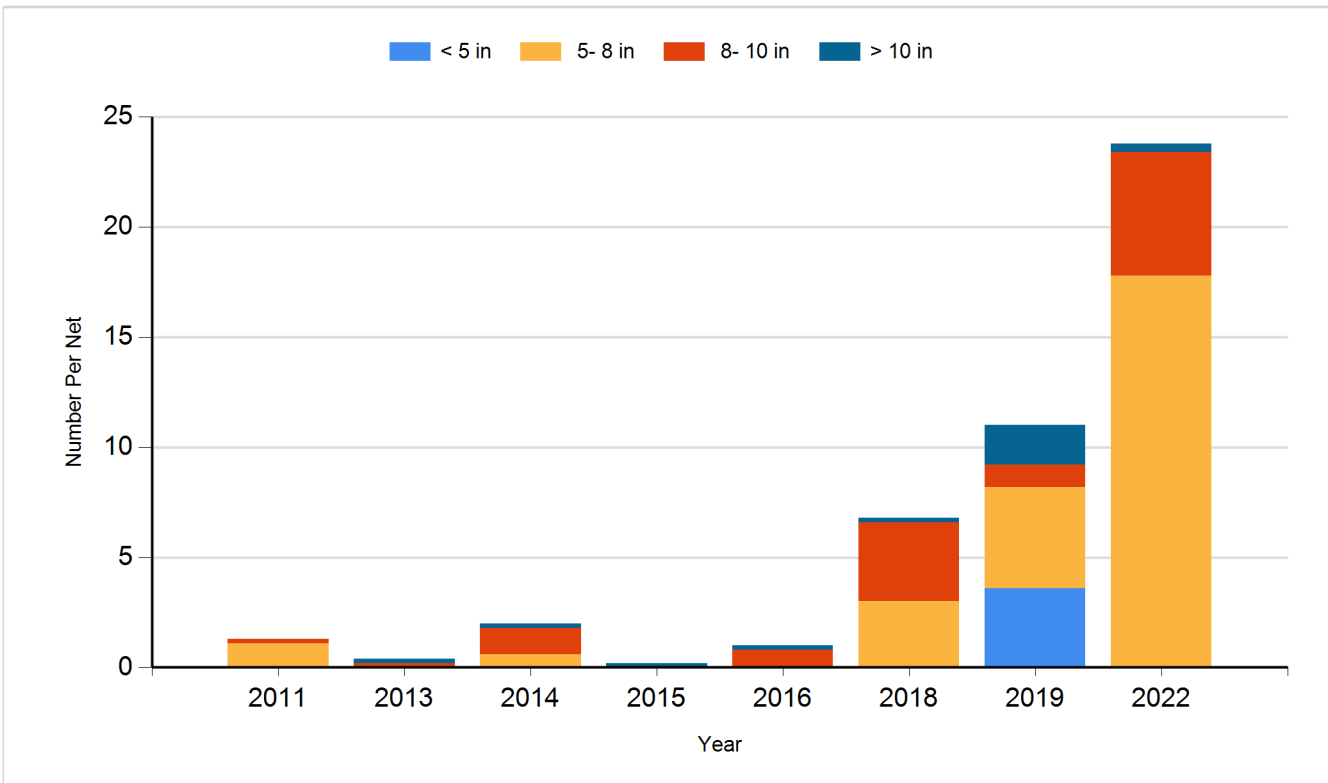
Species: Black Bullhead  
Gear: std exp gill net



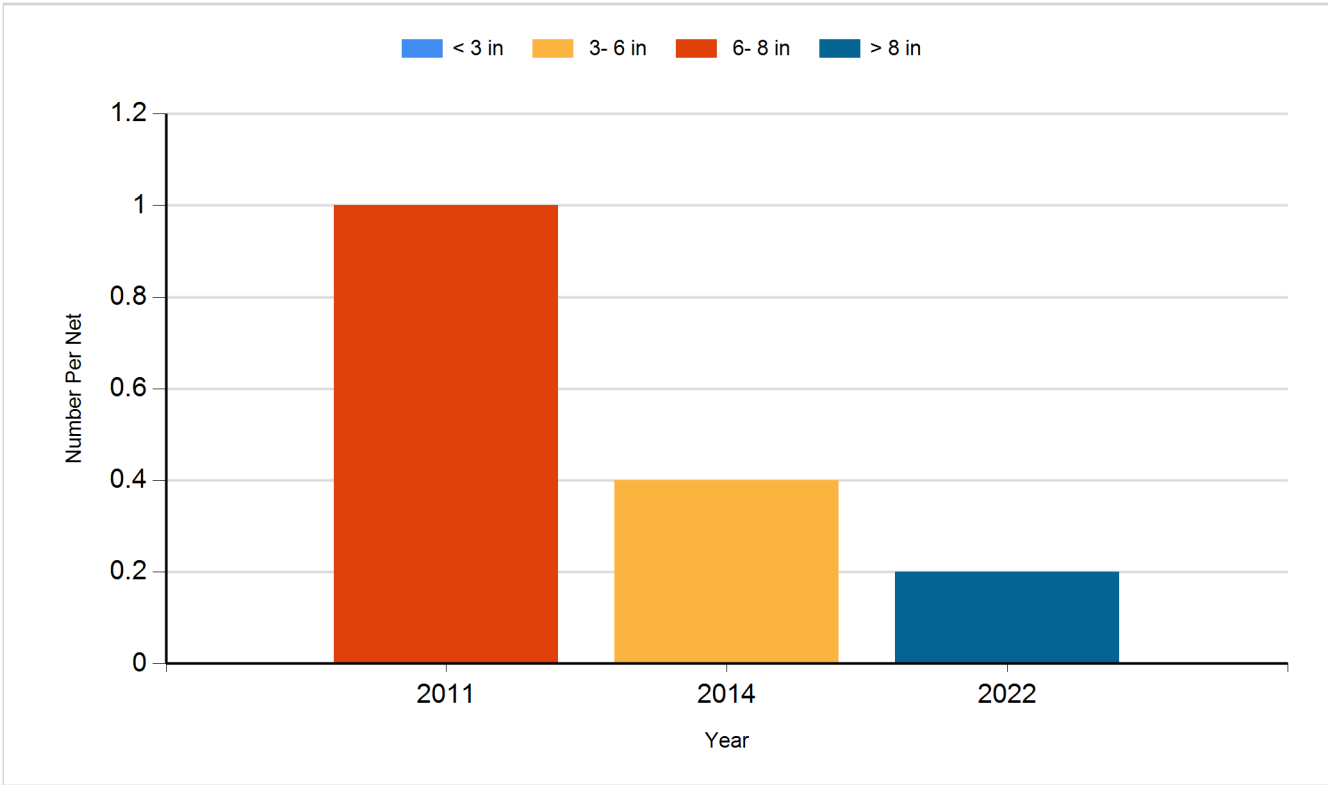
Species: Black Crappie  
Gear: AFS std frame net



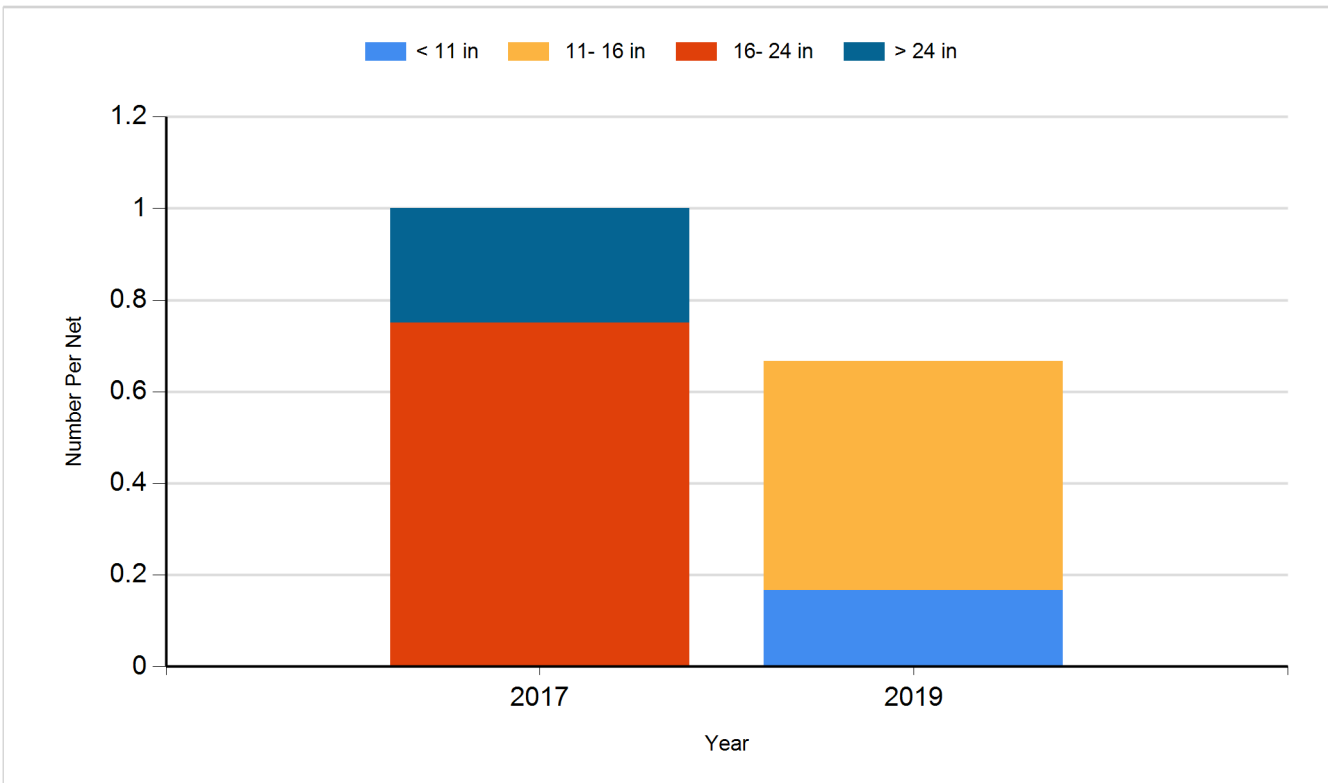
Species: Black Crappie  
Gear: frame net (std 3/4 in)



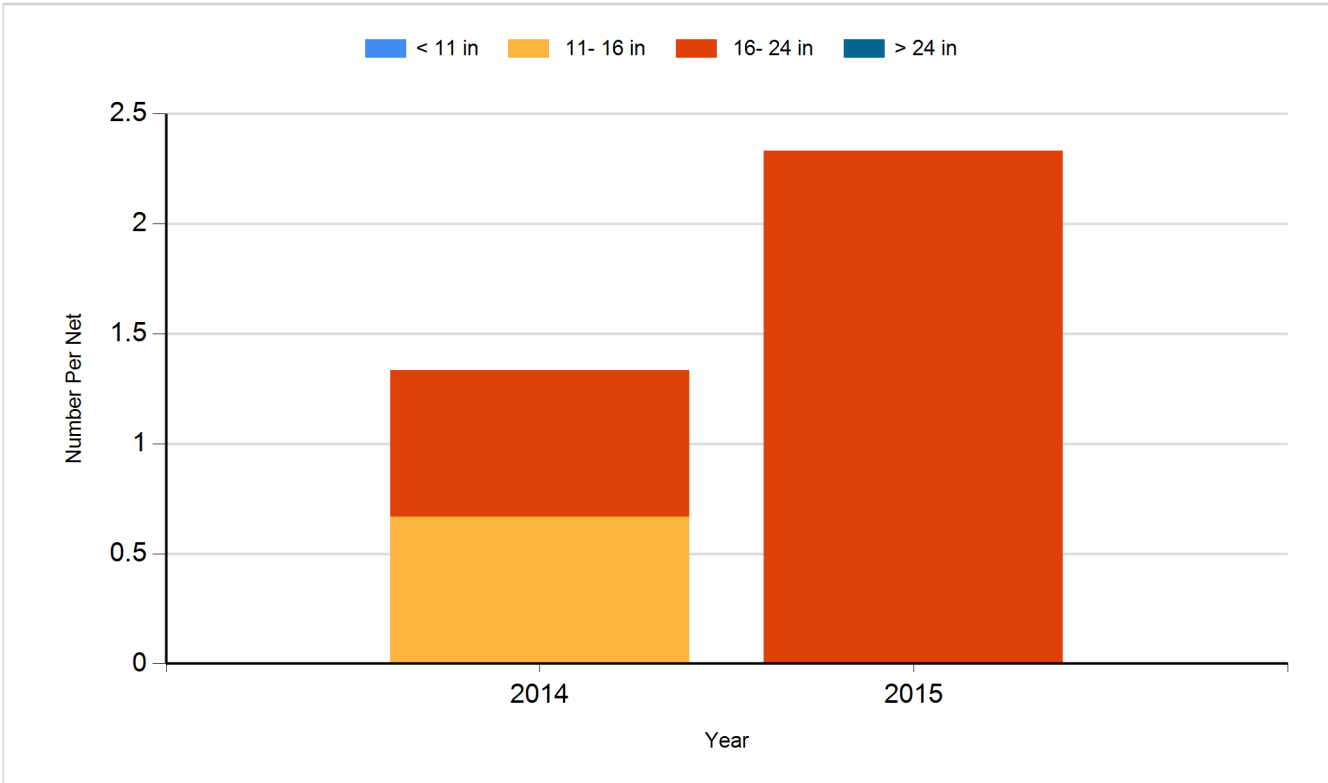
Species: Bluegill  
Gear: frame net (std 3/4 in)



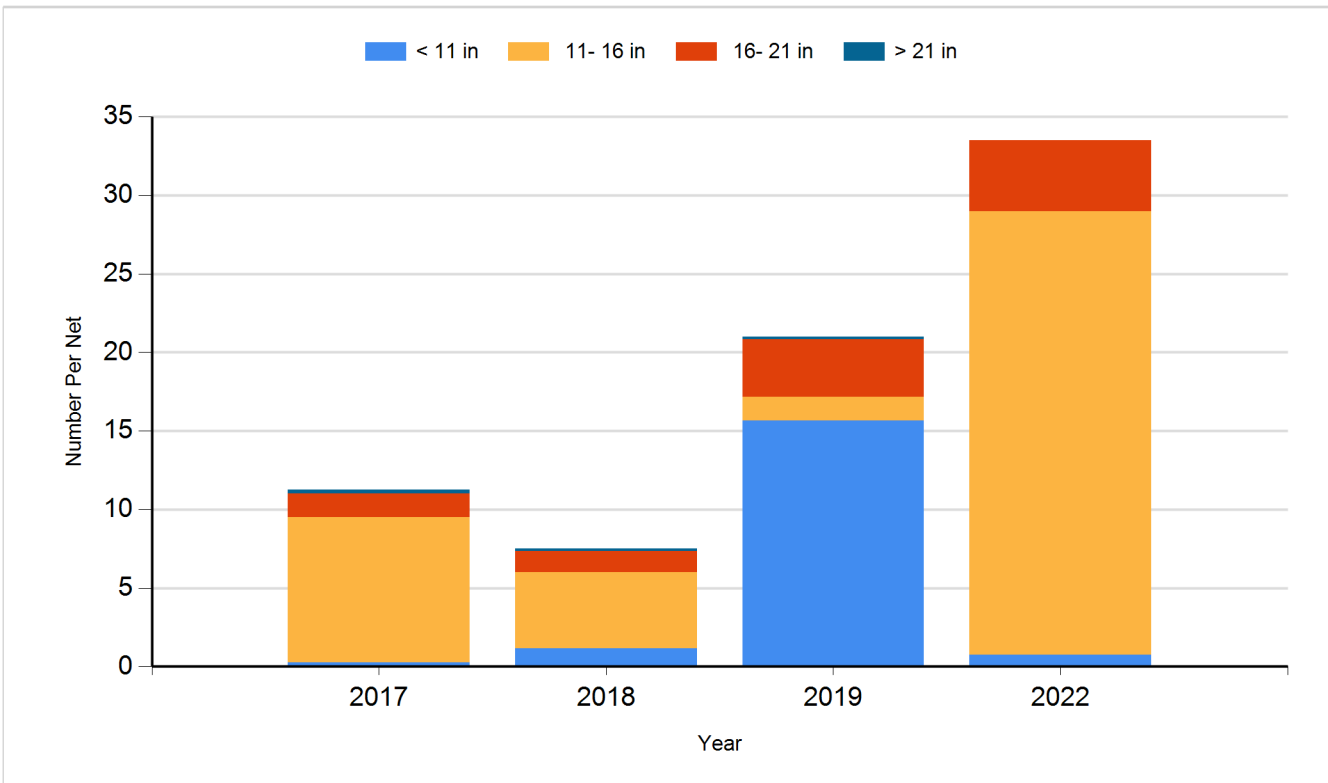
Species: Channel Catfish  
Gear: AFS std gill net



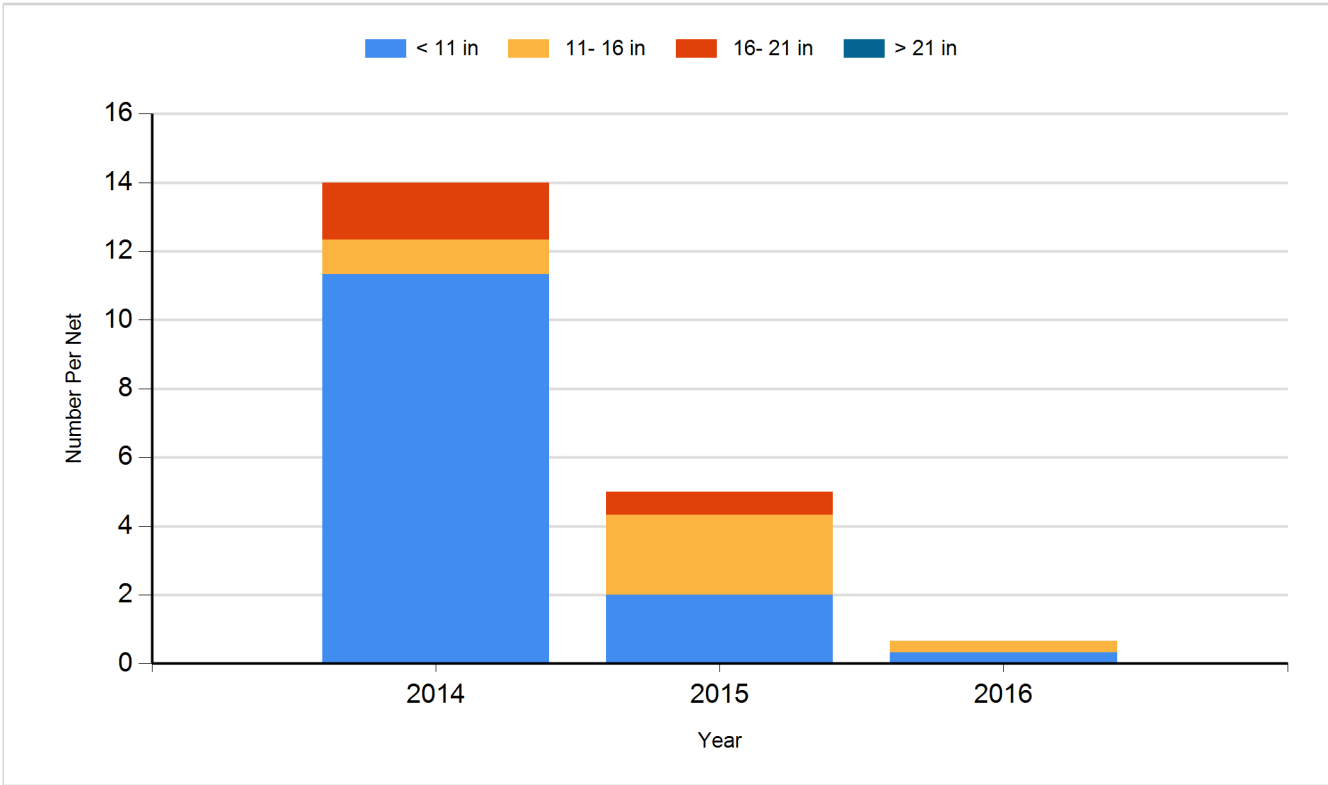
Species: Channel Catfish  
Gear: std exp gill net



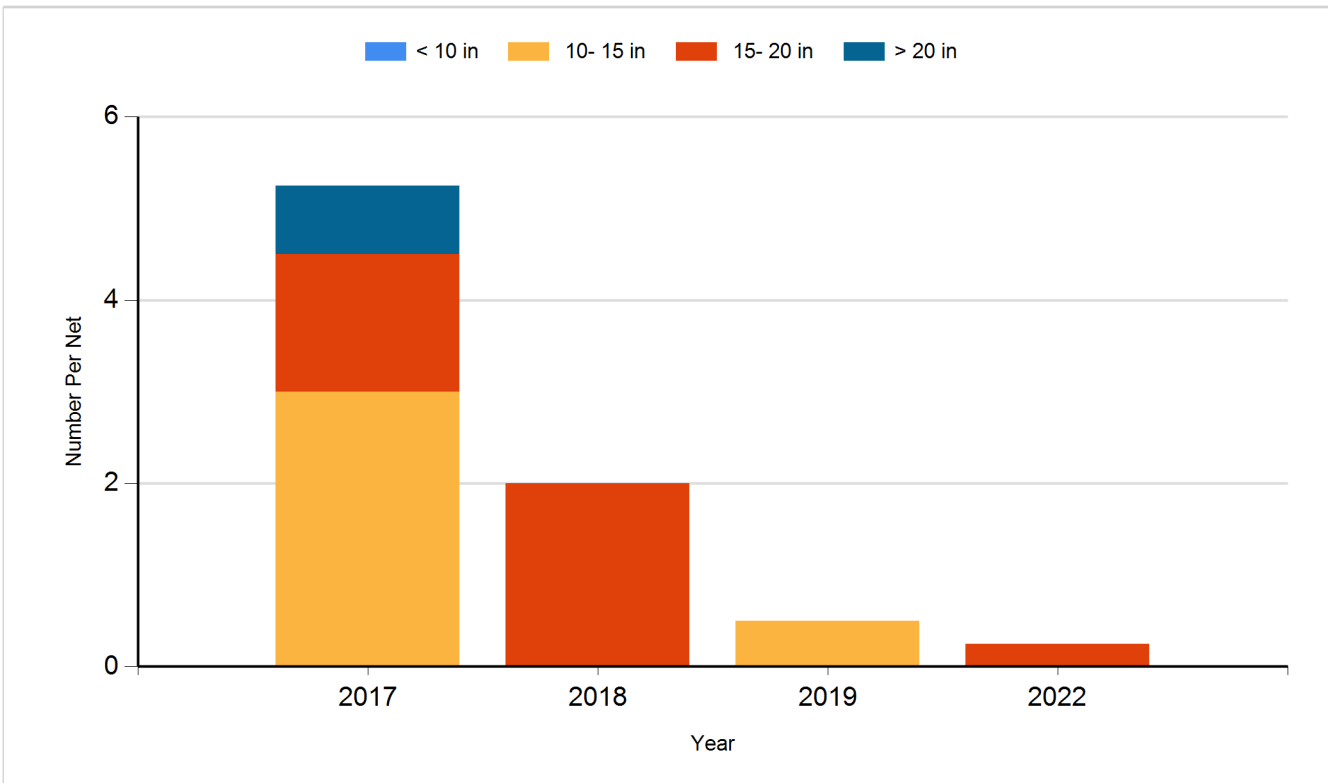
Species: Common Carp  
Gear: AFS std gill net



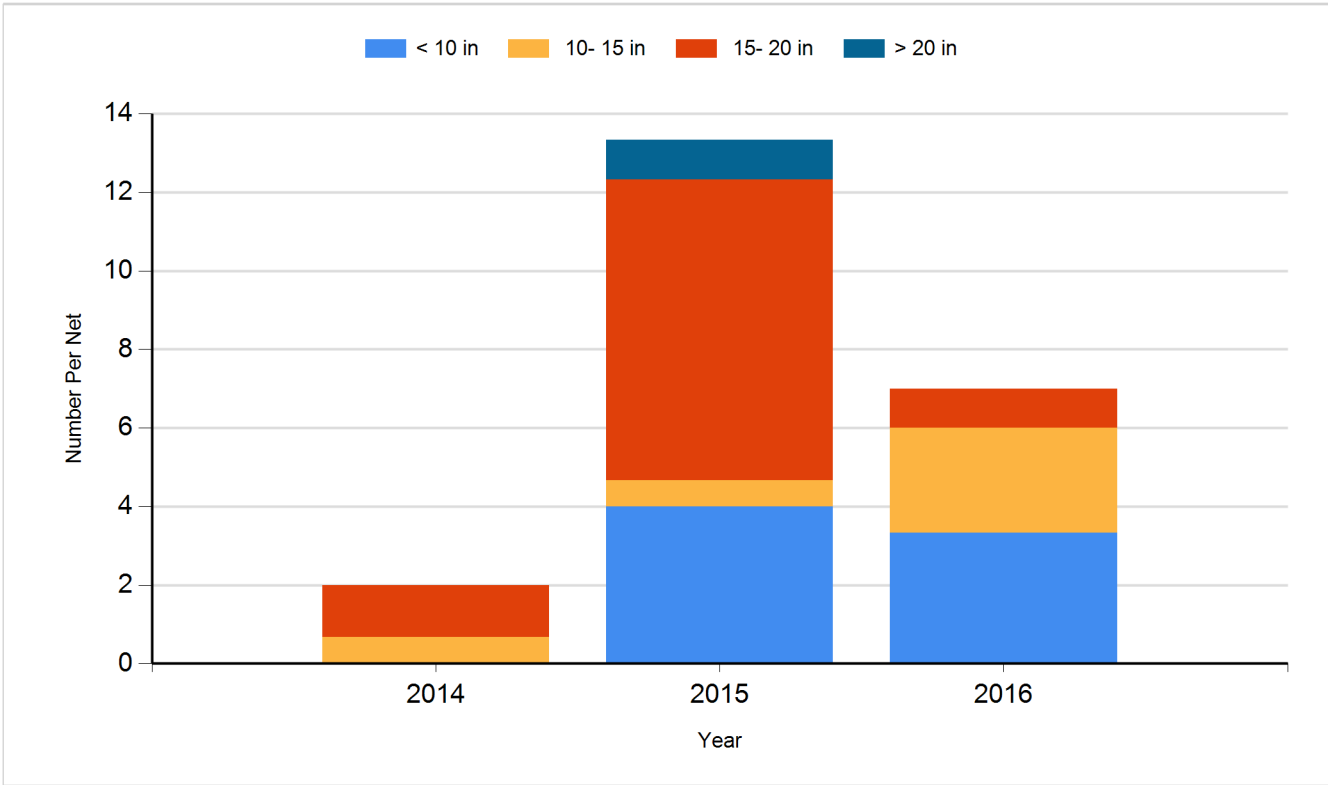
Species: Common Carp  
Gear: std exp gill net



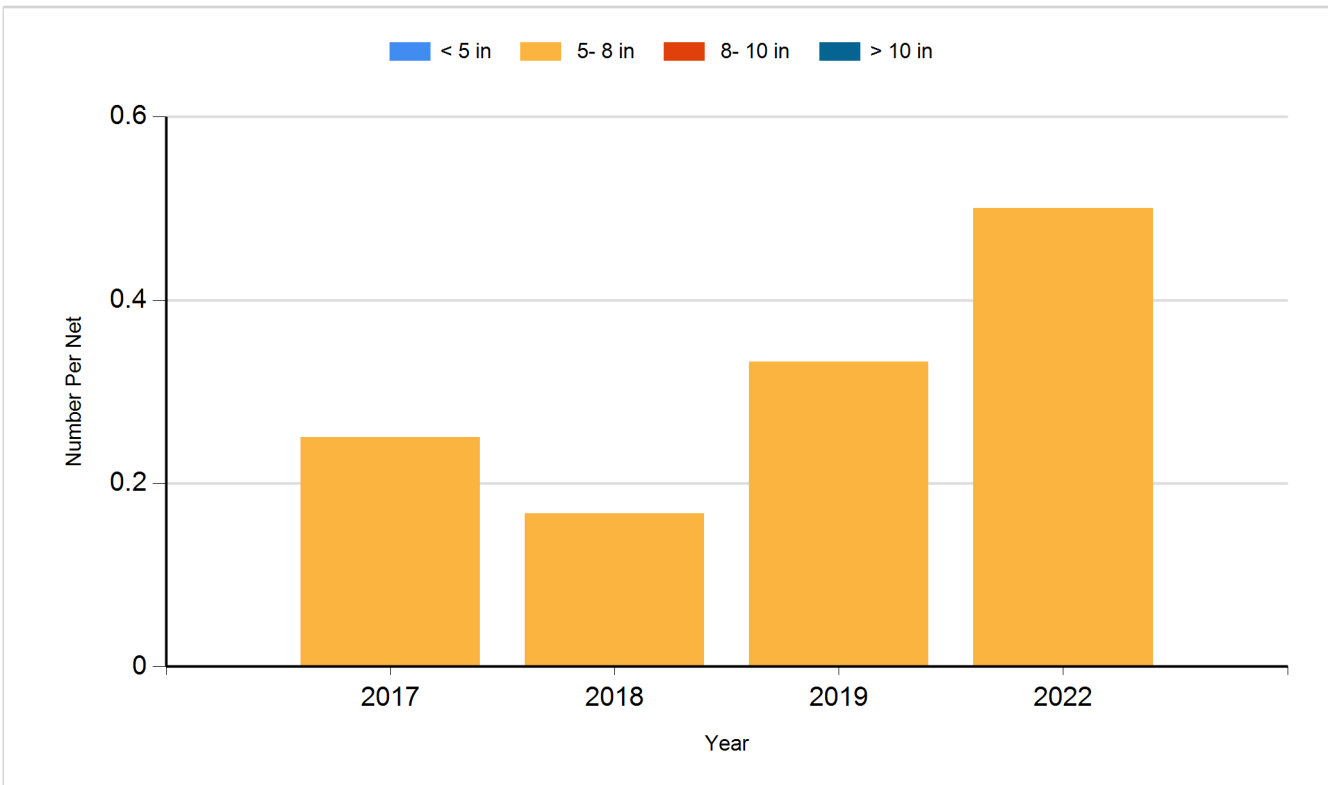
Species: Walleye  
Gear: AFS std gill net



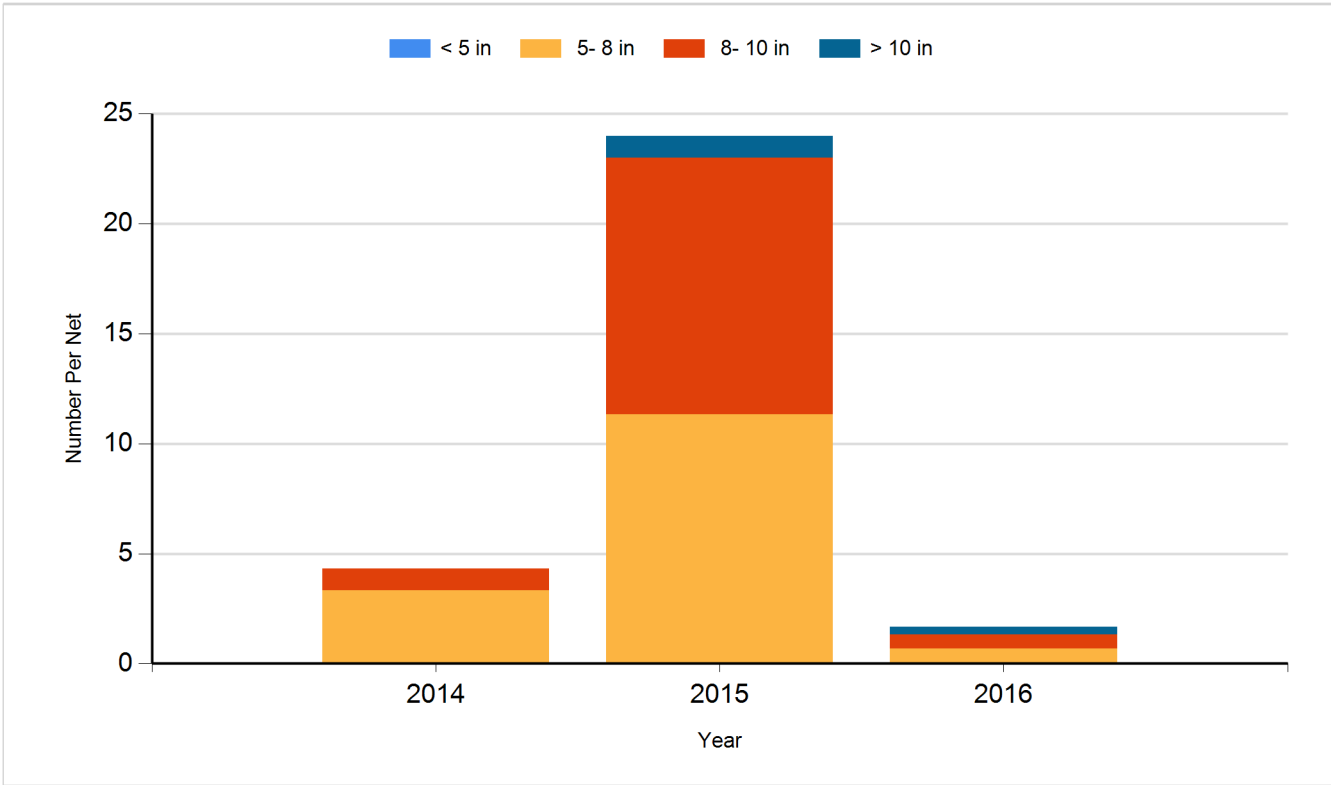
Species: Walleye  
Gear: std exp gill net



Species: Yellow Perch  
Gear: AFS std gill net



Species: Yellow Perch  
Gear: std exp gill net



## **Fish Stocking**

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

Year	Species	Size	Number
2011	Channel Catfish	Adult	81
2011	Walleye	Large Fingerling	638
2011	Yellow Perch	Adult	319
2013	Black Crappie	Juvenile	70
2013	Northern Pike	Adult	38
2013	Walleye	Fry	200,000
2013	Walleye	Juvenile	308
2013	Yellow Perch	Juvenile	2,600
2014	Walleye	Fry	75,000
2015	Walleye	Small Fingerling	5,120
2016	Gizzard Shad	Adult	235
2016	Walleye	Juvenile	647
2017	Yellow Perch	Small Fingerling	50,640
2019	Walleye	Small Fingerling	6,000
2022	Saugeye	Juvenile	7,315