

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Whitewood, Kingsbury County
LKT-Lake-55-800
2021

Lake Information

Name:	Whitewood	Maximum Depth:	7 Feet
County:	Kingsbury	Mean Depth:	4 Feet
Legal Description:	T110N- R54W-Sec. 2, 3, 9-21; T110N- R53W-Sec.18-19		
Surface Area:	5,815 Acres		

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jul 28, 2021	8 net-nights

Common Fish Species Present

Walleye

Yellow Perch

Black Bullhead

Northern Pike

White Sucker

Black Crappie

White Bass

Common Carp

Bigmouth Buffalo

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	Bigmouth Buffalo	2	0.3	0.2	50		0			
	Black Bullhead	119	14.4	6.5	31	6	1			
	Black Crappie	21	2.6	0.8	95		71	16	117	2
	Common Carp	7	0.9	0.6	57		0			
	Northern Pike	55	6.9	1.8	89	7	2		83	1
	Walleye	168	21.0	3.6	76	5	1		96	1
	White Bass	11	1.4	0.5	100		18		101	2
	White Sucker	54	6.8	2.7	100		100			
	Yellow Perch	130	16.3	2.4	90	4	50	6	102	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
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
AFS std gill net	Bigmouth Buffalo						0.0	5.8	10.3	4.1	0.3	4.10
	Black Bullhead						13.8	12.4	0.3	5.8	14.4	9.34
	Black Crappie						0.0	0.0	0.0	0.1	2.6	0.54
	Common Carp						19.2	6.3	0.3	1.5	0.9	5.64
	Northern Pike						2.0	0.6	0.0	4.0	6.9	2.70
	Walleye						4.7	5.6	0.5	7.6	21.0	7.88
	White Bass						0.0	0.0	0.0	0.1	1.4	0.30
	White Sucker						2.3	1.0	0.8	2.9	6.8	2.76
	Yellow Perch						21.0	19.0	9.3	10.0	16.3	15.12
frame net (std 3/4 in)	Bigmouth Buffalo	0.8										0.80
	Black Bullhead	67.2										67.20
	Black Crappie	4.2										4.20
	Common Carp	14.2										14.20
	Northern Pike	29.8										29.80
	Walleye	78.4										78.40
	White Sucker	14.2										14.20
	Yellow Perch	2.8										2.80
std exp gill net	Bigmouth Buffalo	2.0		0.0	0.0	0.0						0.50
	Black Bullhead	22.0		34.3	17.0	25.7						24.75
	Common Carp	20.7		2.0	3.0	13.7						9.85
	Northern Pike	0.3		6.3	10.3	3.7						5.15
	Walleye	43.0		33.7	22.7	11.3						27.68
	White Sucker	22.0		8.0	7.3	3.3						10.15
	Yellow Perch	120.0		33.7	79.0	69.7						75.60

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									
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
AFS std gill net	Bigmouth Buffalo	PSD							0	0	0	50
		PSD-P							0	0	0	0
	Black Bullhead	PSD						90	93	0	35	31
		PSD-P						0	0	0	0	1
	Black Crappie	PSD									100	95
		PSD-P									0	71
		Wr									147	117
	Common Carp	PSD						65	86	50	8	57
		PSD-P						8	16	50	0	0
	Northern Pike	PSD						83	40	0	31	89
		PSD-P						8	20	0	0	2
		Wr						85	88		96	83
	Walleye	PSD						100	29	100	8	76
		PSD-P						57	9	100	3	1
		Wr						98	89	92	101	96
	White Bass	PSD									100	100
		PSD-P									100	18
		Wr									106	101
	White Sucker	PSD						100	100	100	39	100
		PSD-P						100	100	100	13	100
	Yellow Perch	PSD						94	35	0	63	90
PSD-P							66	11	0	6	50	
Wr							95	100	112	113	102	
frame net (std 3/4 in)	Bigmouth Buffalo	PSD	75									
		PSD-P	0									
		Wr	83									
	Black Bullhead	PSD	18									
		PSD-P	0									
		Wr	84									
	Black Crappie	PSD	33									
		PSD-P	5									
		Wr	109									
	Common Carp	PSD	85									

Gear	Species	Index	Year											
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		
frame net (std 3/4 in)	Common Carp	PSD-P	48											
		Wr	91											
	Northern Pike	PSD	30											
		PSD-P	0											
		Wr	80											
	Walleye	PSD	0											
		PSD-P	0											
		Wr	88											
	White Sucker	PSD	97											
		PSD-P	66											
		Wr	94											
	Yellow Perch	PSD	50											
		PSD-P	7											
		Wr	98											
std exp gill net	Bigmouth Buffalo	PSD	0											
		PSD-P	0											
		Wr	95											
	Black Bullhead	PSD	33		20	20	61							
		PSD-P	0		0	0	0							
		Wr	76											
	Common Carp	PSD	10		100	78	39							
		PSD-P	2		17	44	15							
		Wr	89											
	Northern Pike	PSD	0		11	32	64							
		PSD-P	0		0	0	0							
		Wr	83		90	89	81							
	Walleye	PSD	0		97	87	94							
		PSD-P	0		1	12	24							
		Wr	88		104	99	92							
	White Sucker	PSD	76		88	100	100							
		PSD-P	3		88	36	100							
		Wr	85											
	Yellow Perch	PSD	20		80	64	75							
		PSD-P	2		74	5	8							
		Wr	97		105	97	88							

Fish Condition

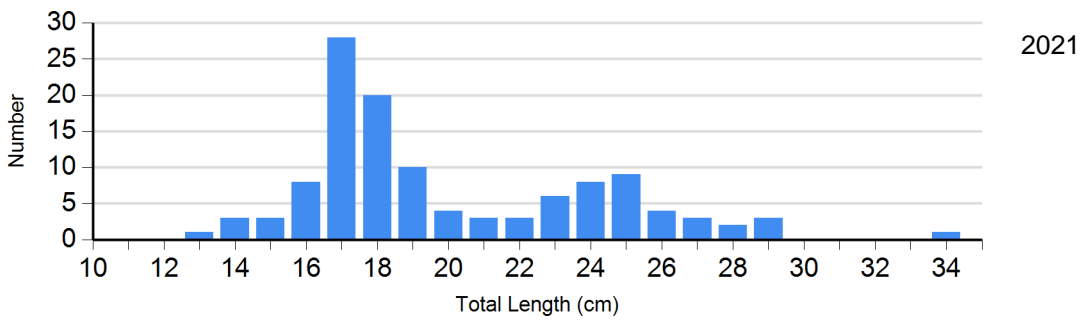
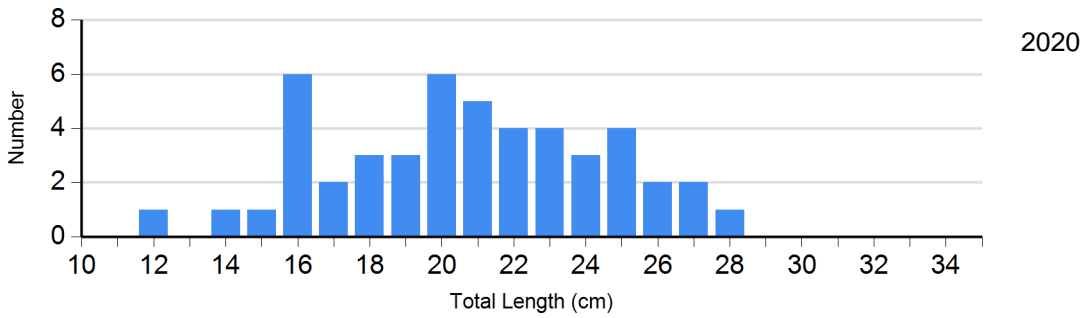
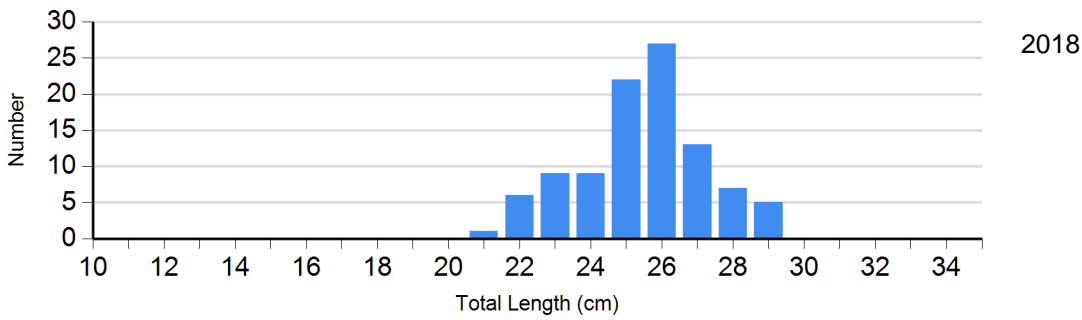
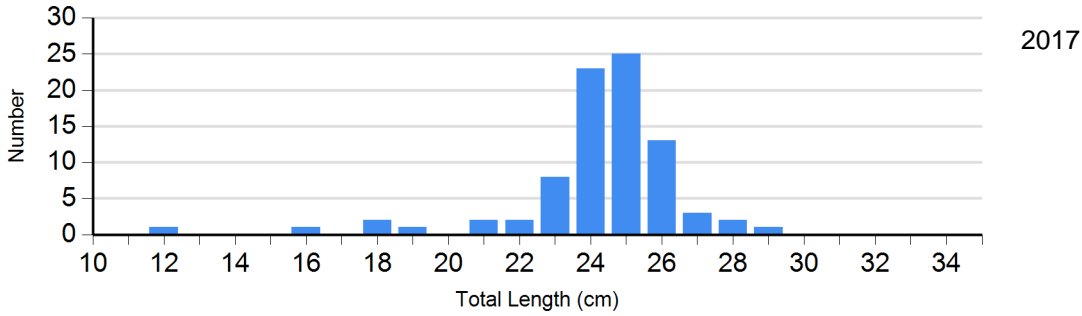
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Northern Pike Gill Net	2017	2	90 (5.1)	9	84 (2.2)	1	88	0	
	2018	3	88 (0.4)	1	96	1	82	0	
	2019	0		0		0		0	
	2020	22	96 (1.4)	10	96 (2.0)	0		0	
	2021	6	87 (1.4)	48	83 (1.0)	1	82	0	
Walleye Gill Net	2017	0		12	102 (2.5)	16	94 (3.3)	0	
	2018	32	90 (0.9)	9	88 (2.3)	4	85 (4.9)	0	
	2019	0		0		3	92 (2.4)	0	
	2020	56	101 (1.0)	3	101 (3.6)	1	93	1	95
	2021	41	93 (0.8)	126	97 (0.8)	0		1	72
White Bass Gill Net	2020	0		0		0		1	106
	2021	0		9	103 (1.8)	0		2	94 (2.1)
Yellow Perch Gill Net	2017	7	95 (3.9)	36	96 (2.6)	81	95 (1.0)	2	
	2018	99	107 (1.5)	36	93 (1.1)	17	87 (1.5)	0	
	2019	56	112 (2.5)	0		0		0	
	2020	30	113 (2.2)	45	113 (1.7)	4	118 (1.8)	1	105
	2021	13	103 (3.1)	52	99 (0.7)	63	103 (0.9)	2	105 (3.2)

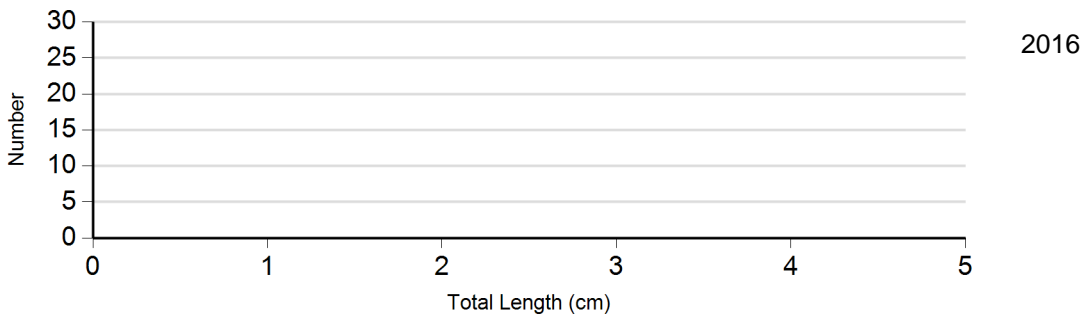
Length Frequency Distribution

Length frequency histogram of species sampled by year.

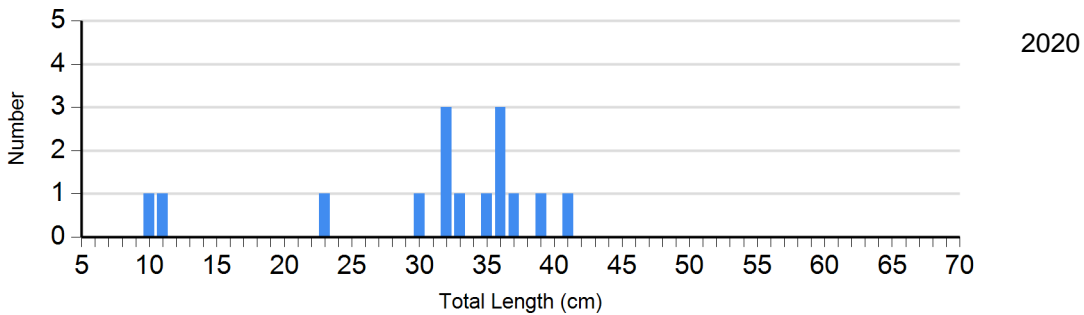
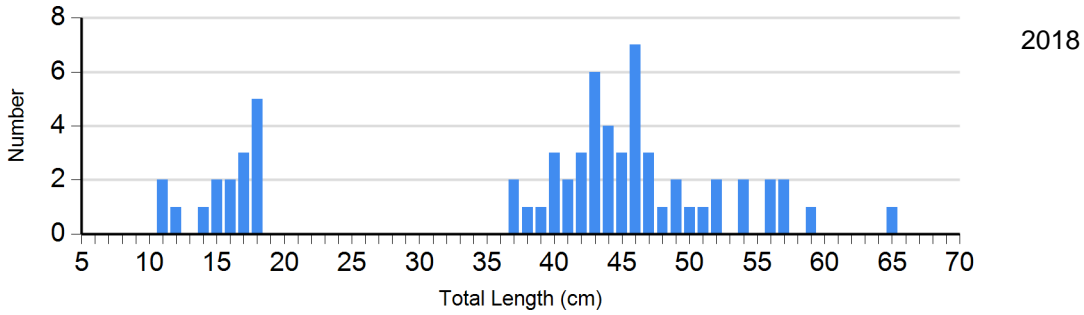
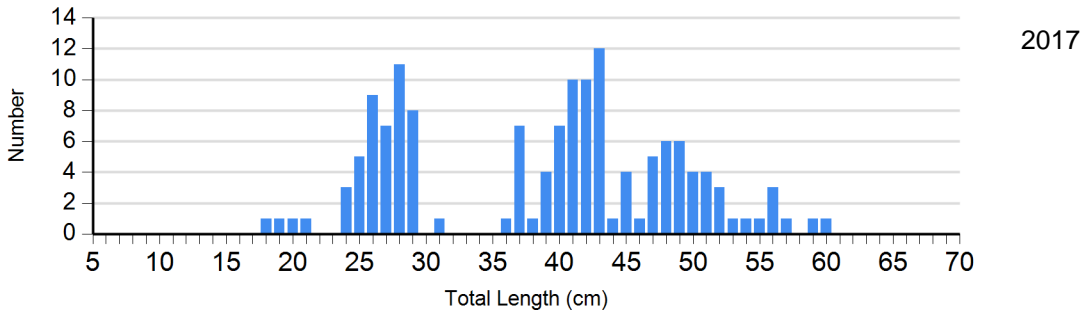
Species: Black Bullhead
Gear: AFS std gill net



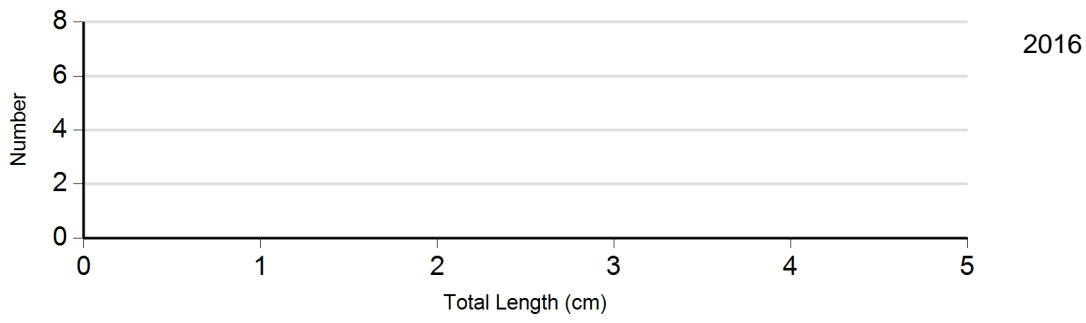
Species: Black Bullhead
Gear: std exp gill net



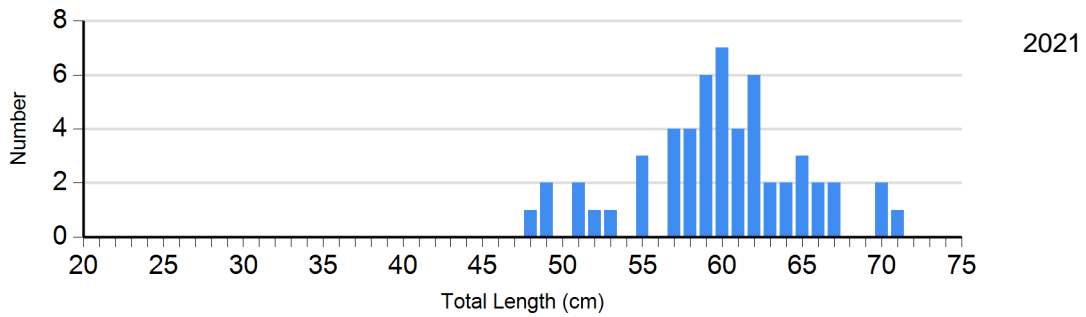
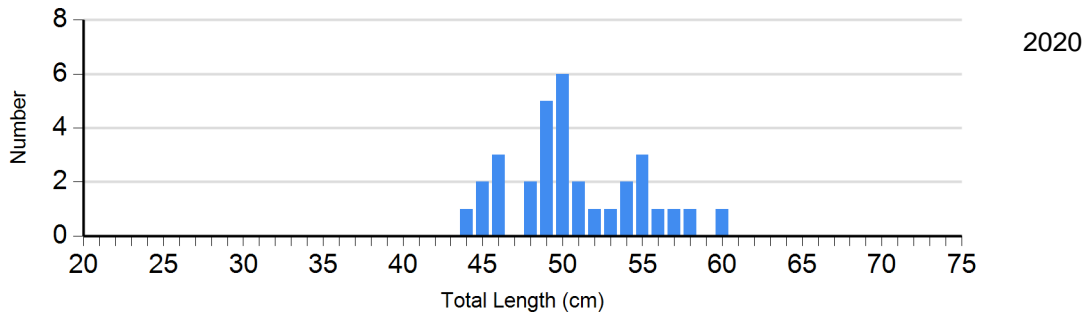
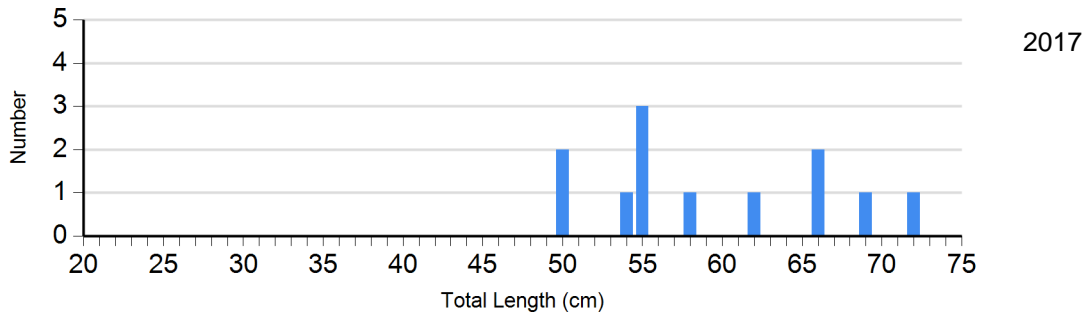
Species: Common Carp
Gear: AFS std gill net



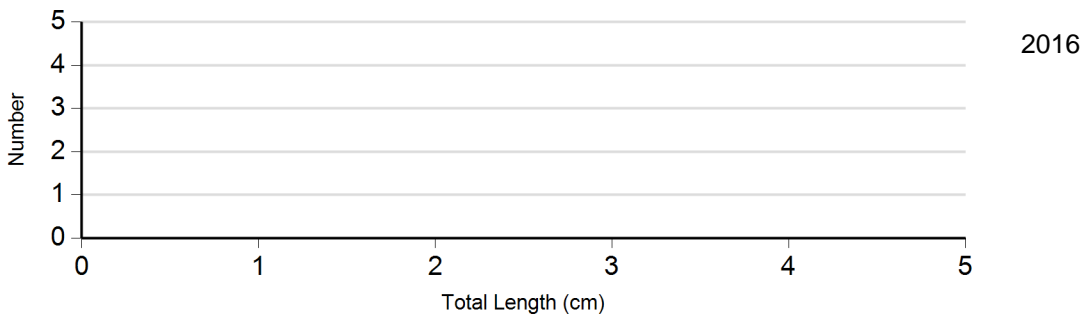
Species: Common Carp
Gear: std exp gill net



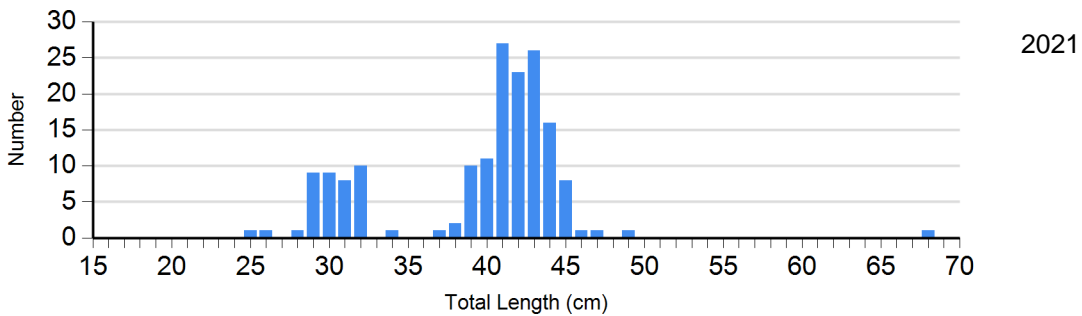
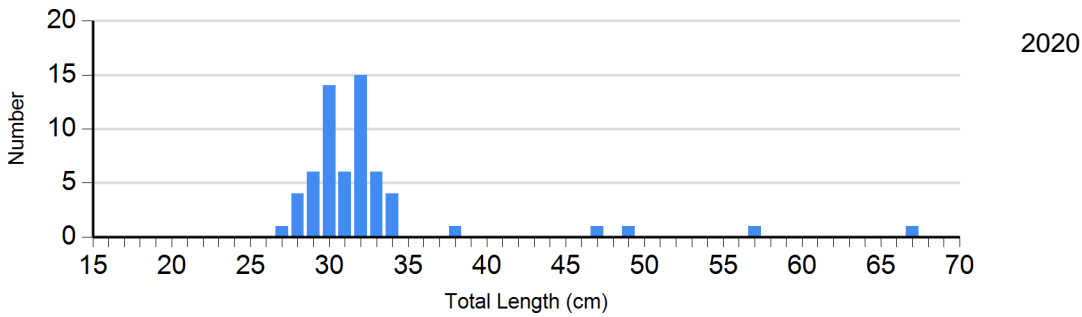
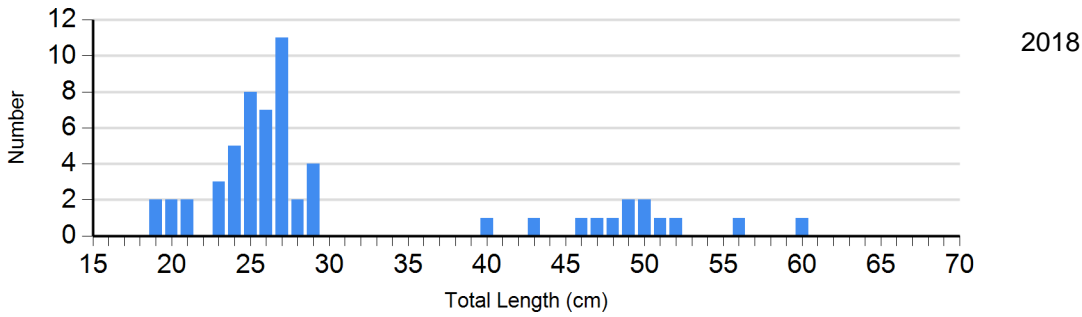
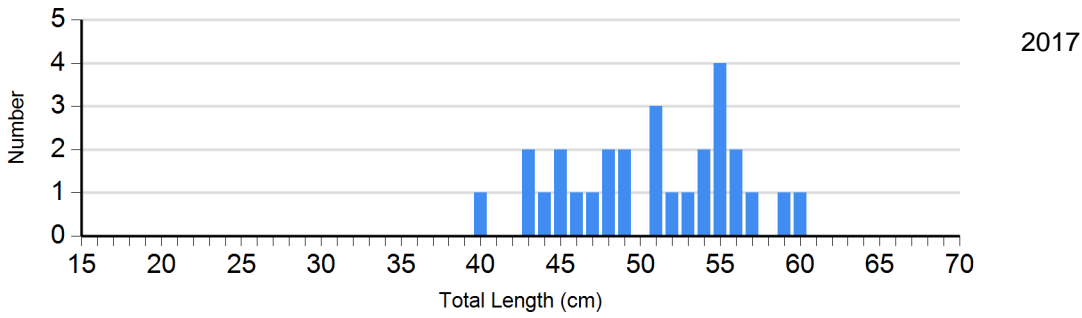
Species: Northern Pike
Gear: AFS std gill net



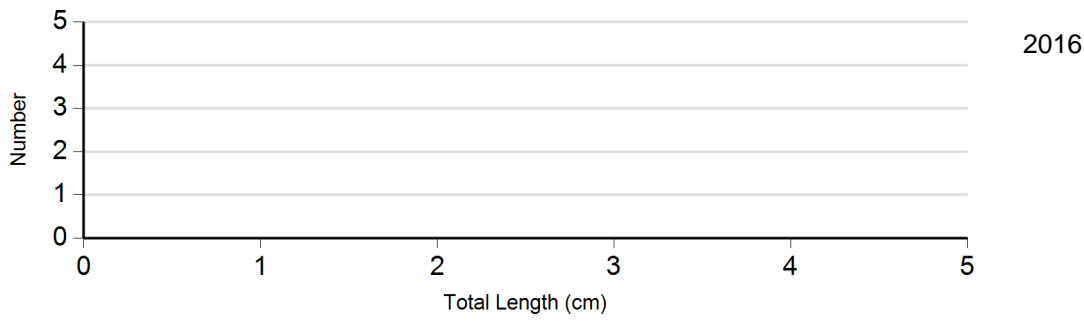
Species: Northern Pike
Gear: std exp gill net



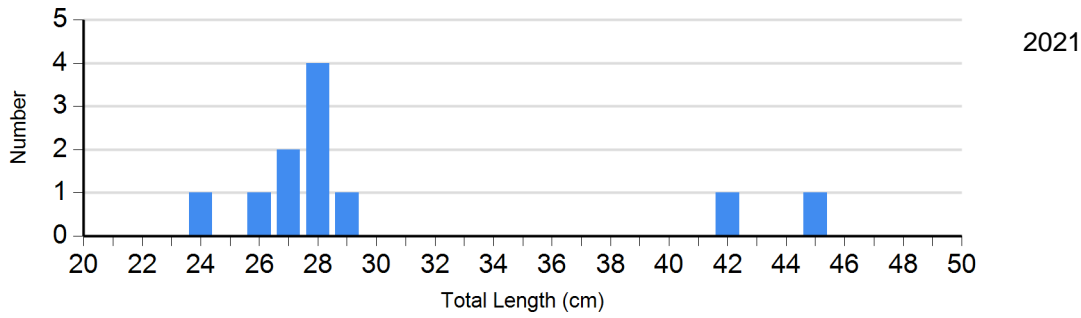
Species: Walleye
Gear: AFS std gill net



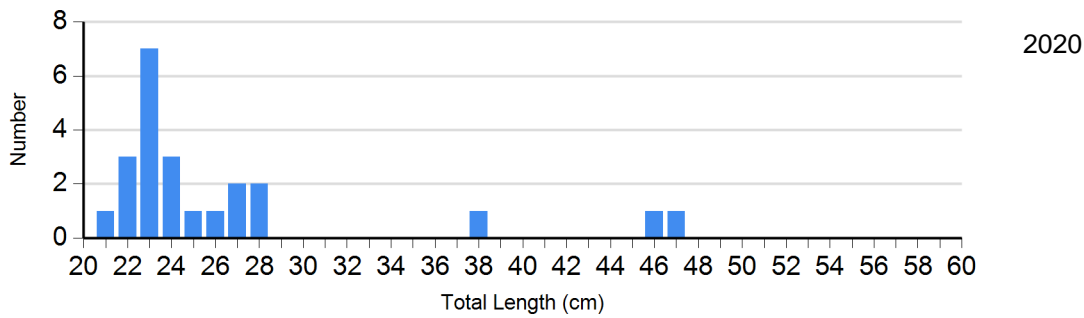
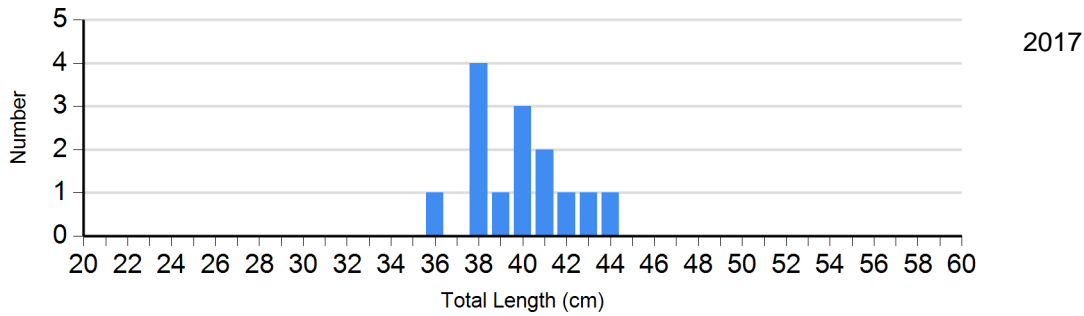
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Gear: std exp gill net

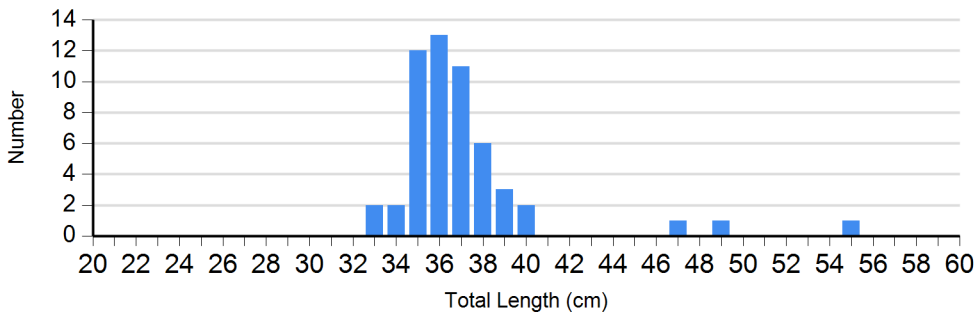


Species: White Bass
Gear: AFS std gill net

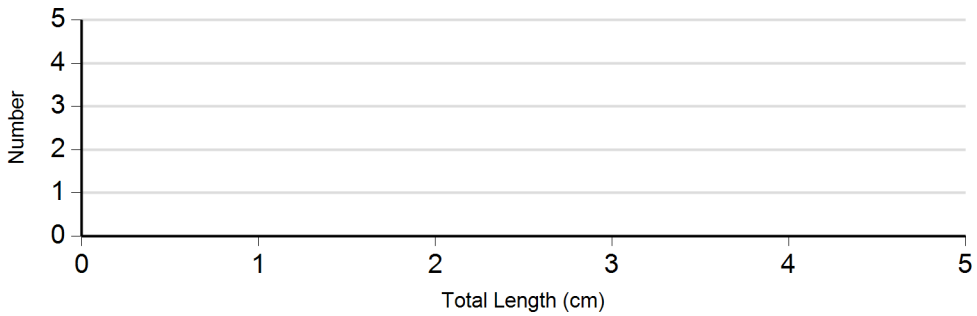


Species: White Sucker
Gear: AFS std gill net

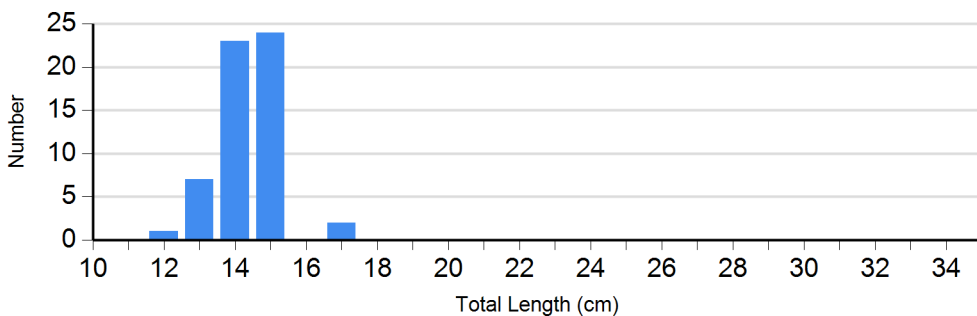
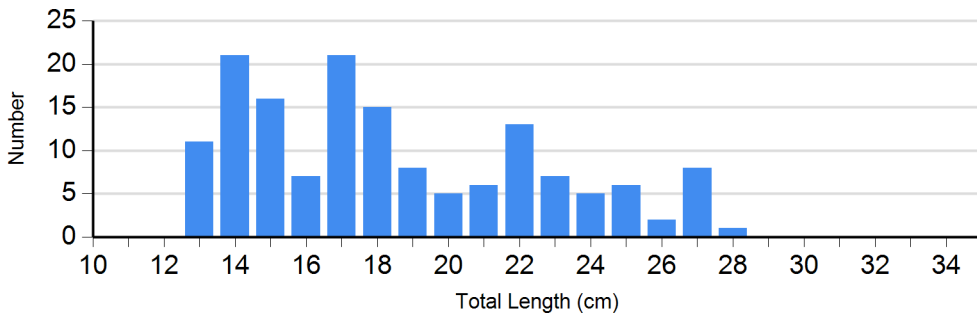
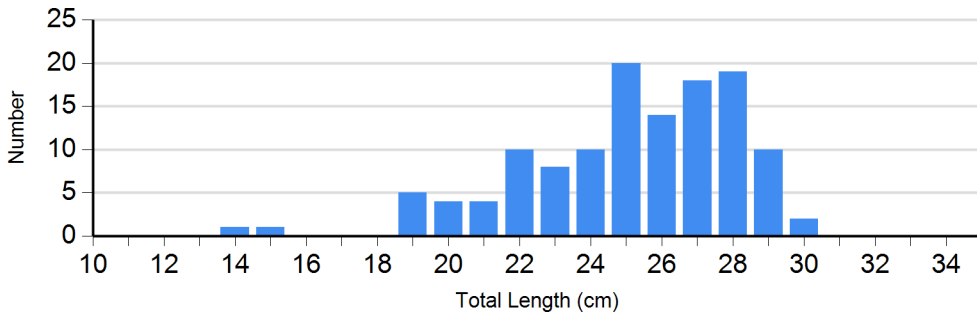


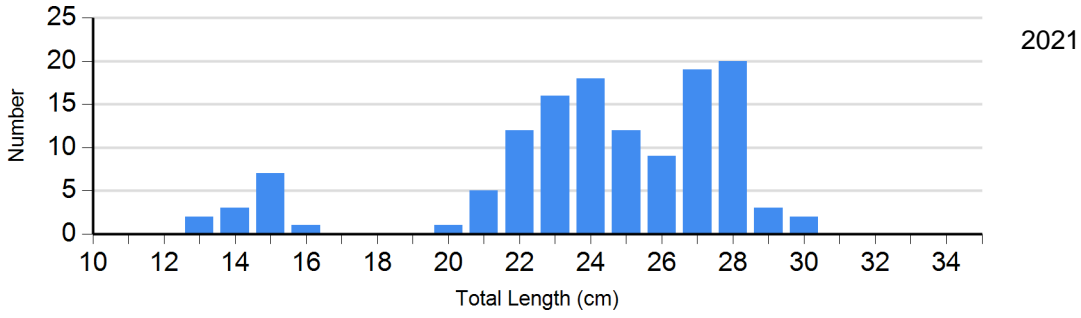
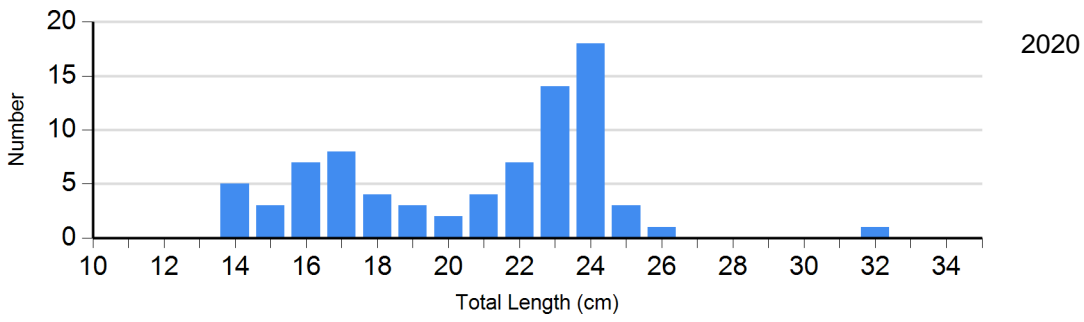


Species: White Sucker
Gear: std exp gill net

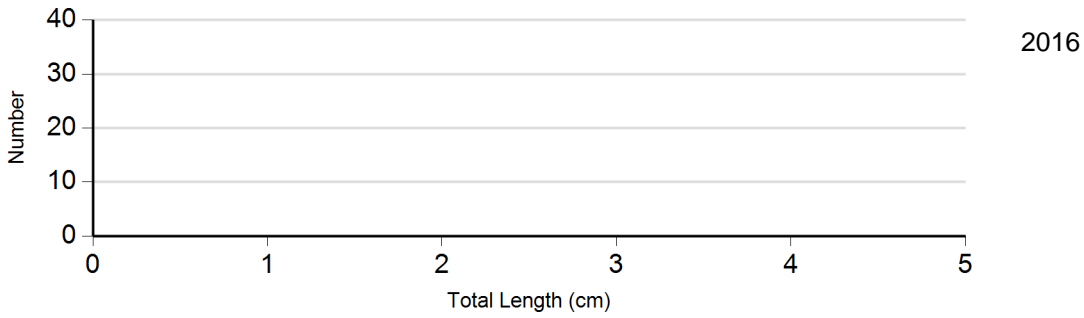


Species: Yellow Perch
Gear: AFS std gill net





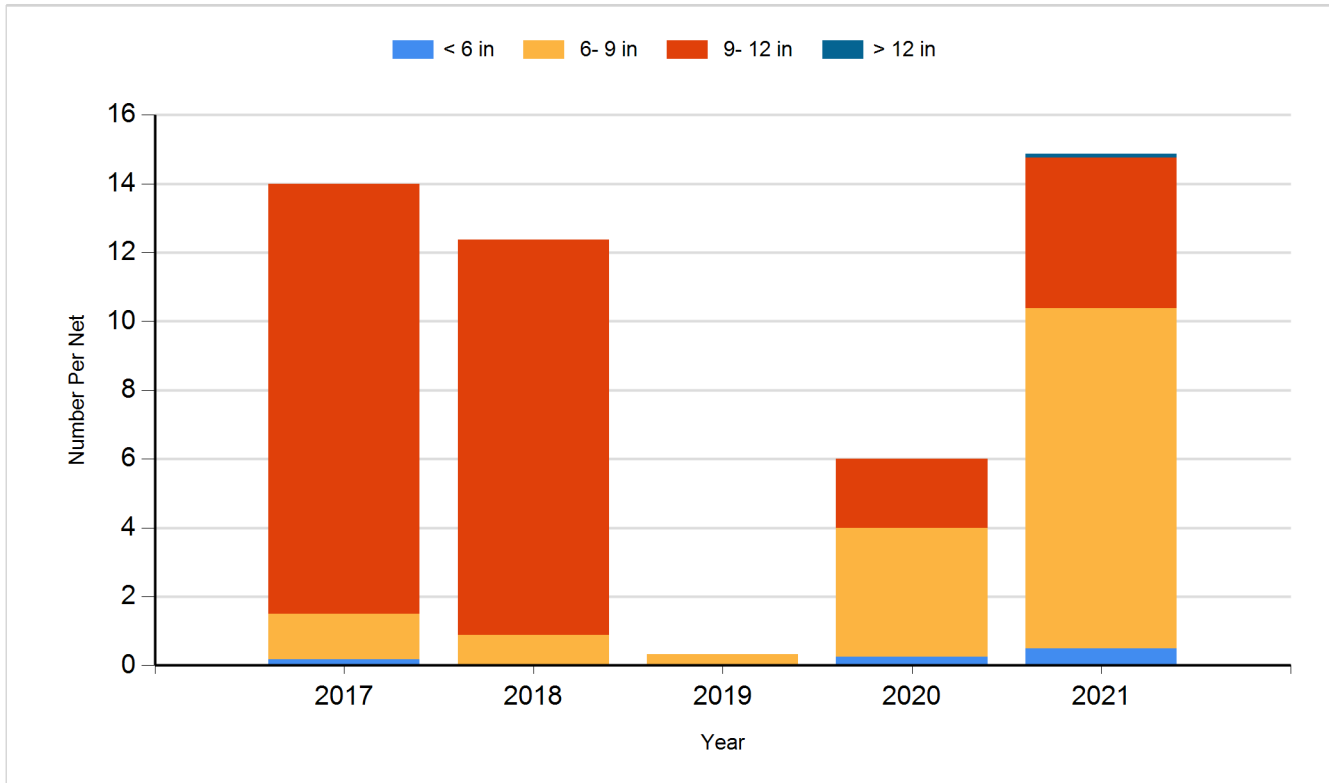
Species: Yellow Perch
 Gear: std exp gill net



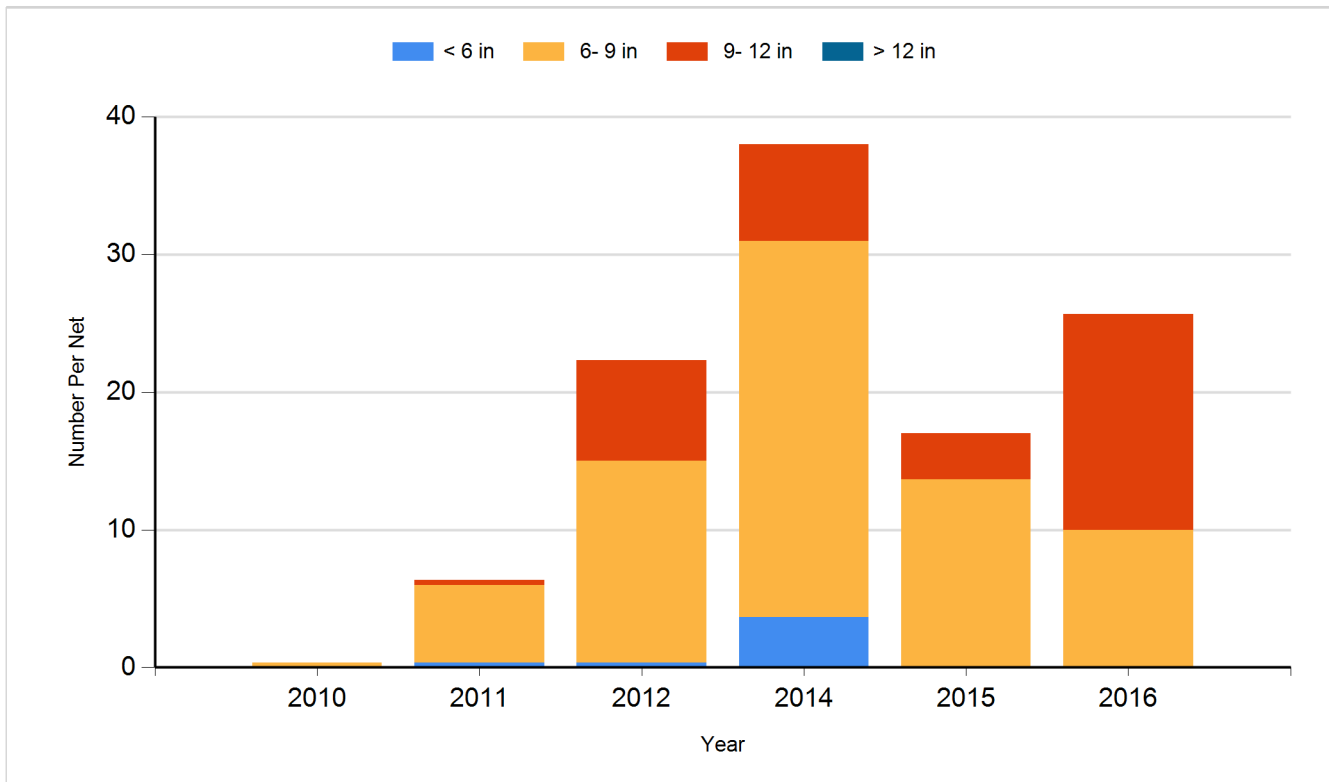
Historic Fish Sizes and Relative Abundance

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

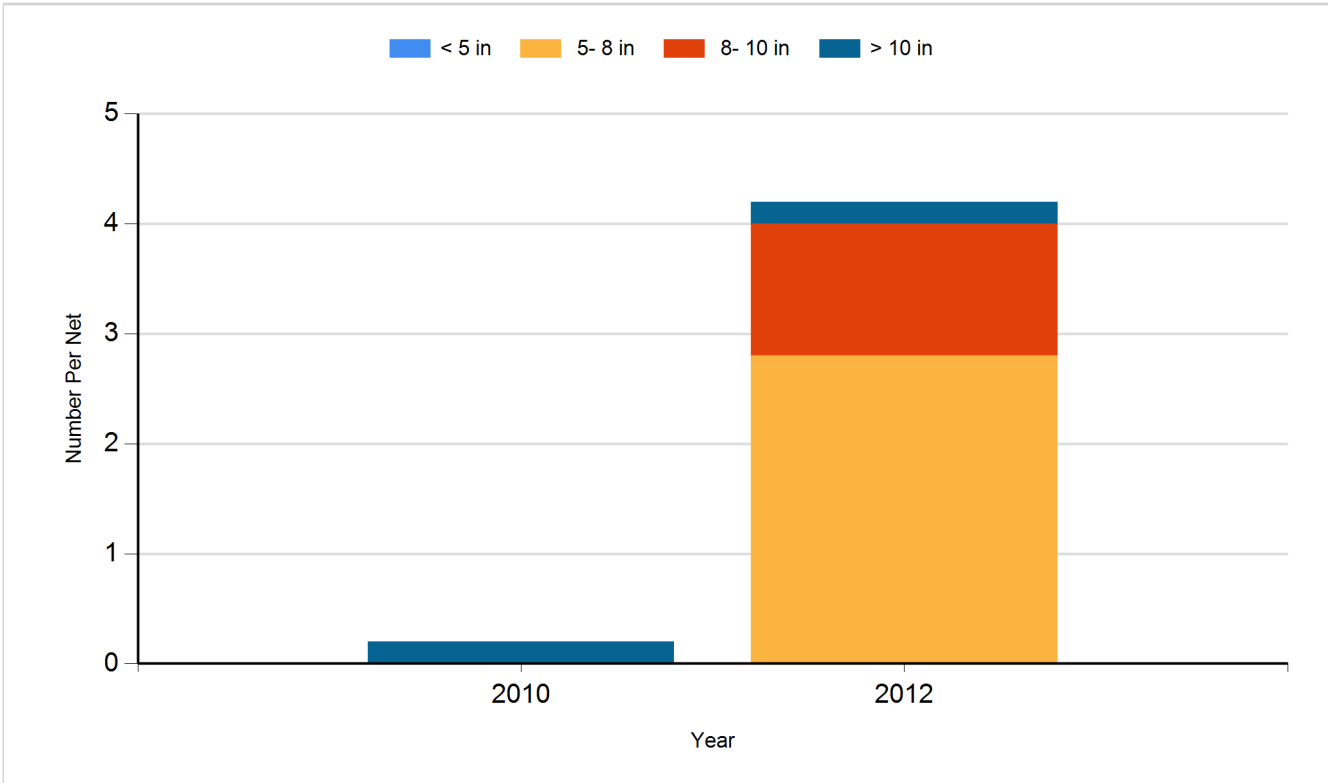
Species: Black Bullhead
Gear: AFS std gill net



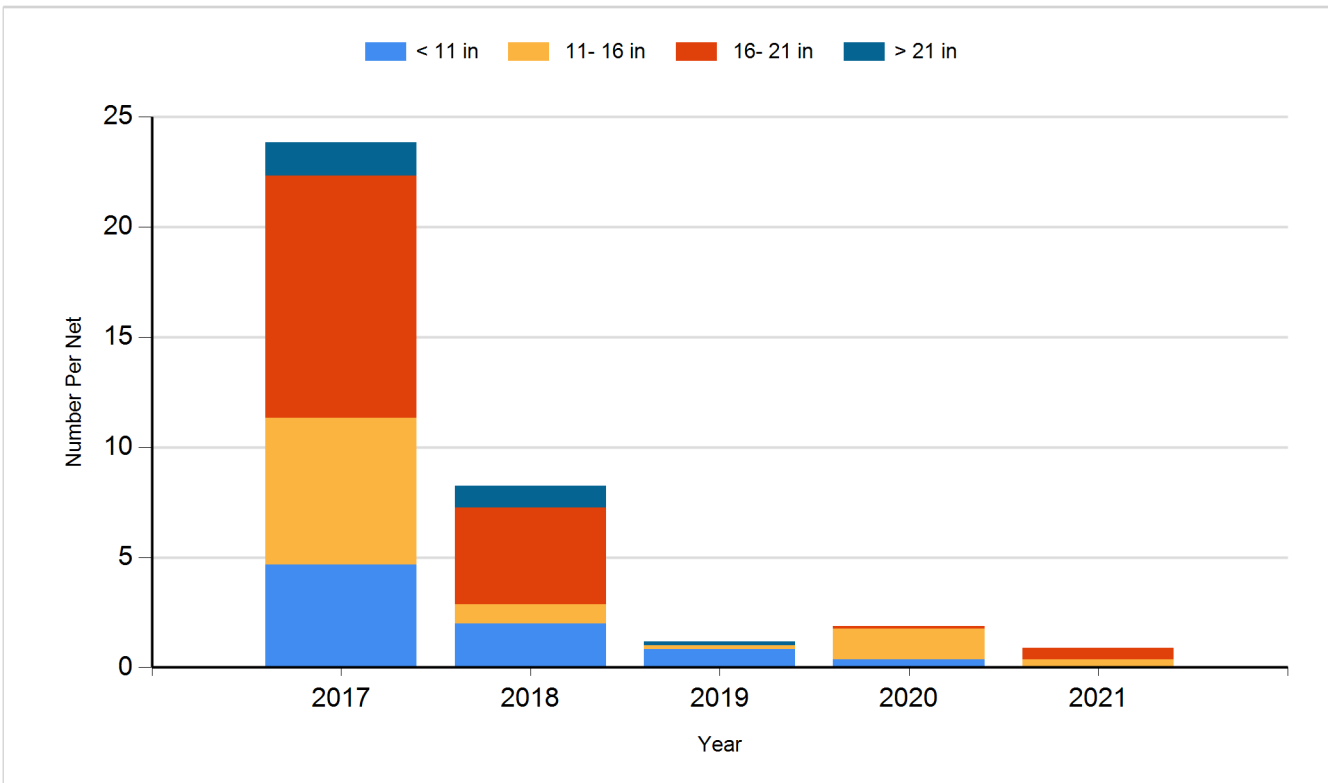
Species: Black Bullhead
Gear: std exp gill net



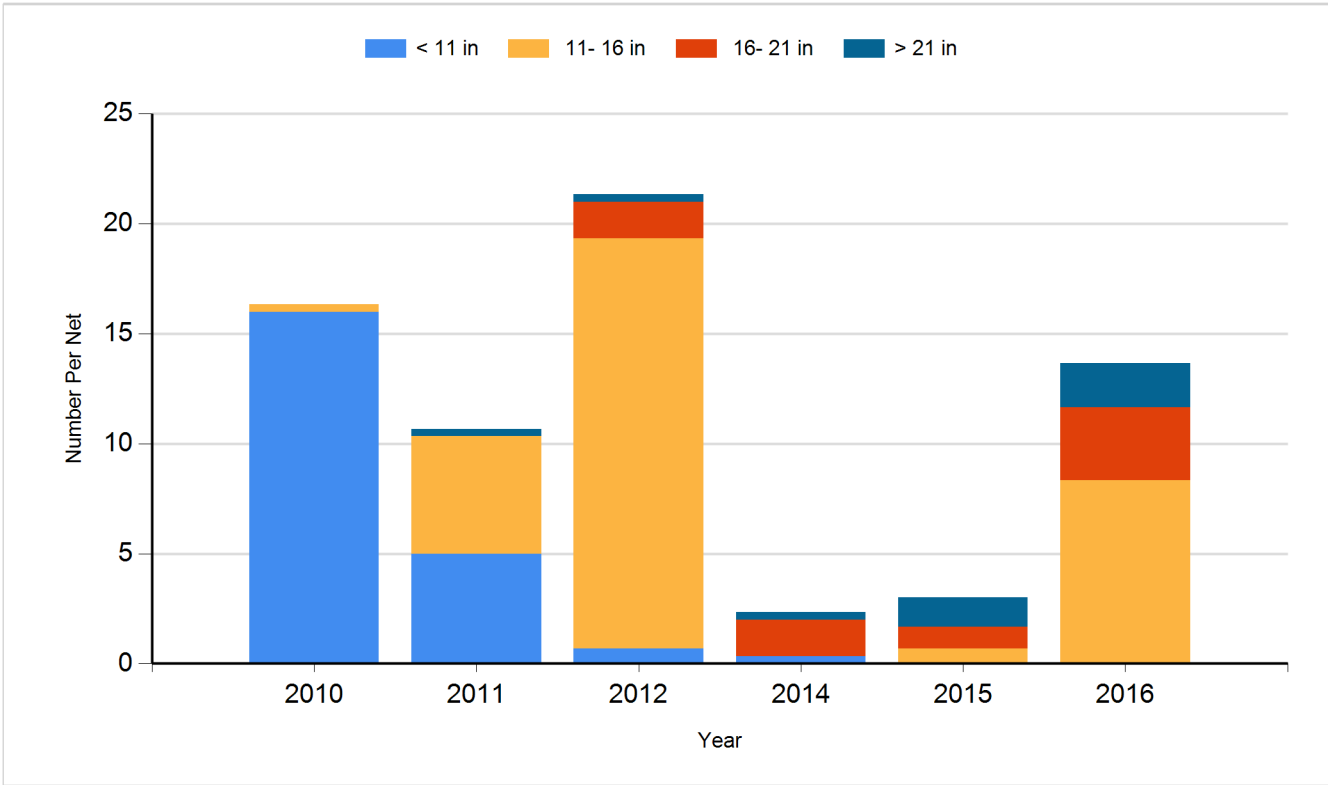
Species: Black Crappie
Gear: frame net (std 3/4 in)



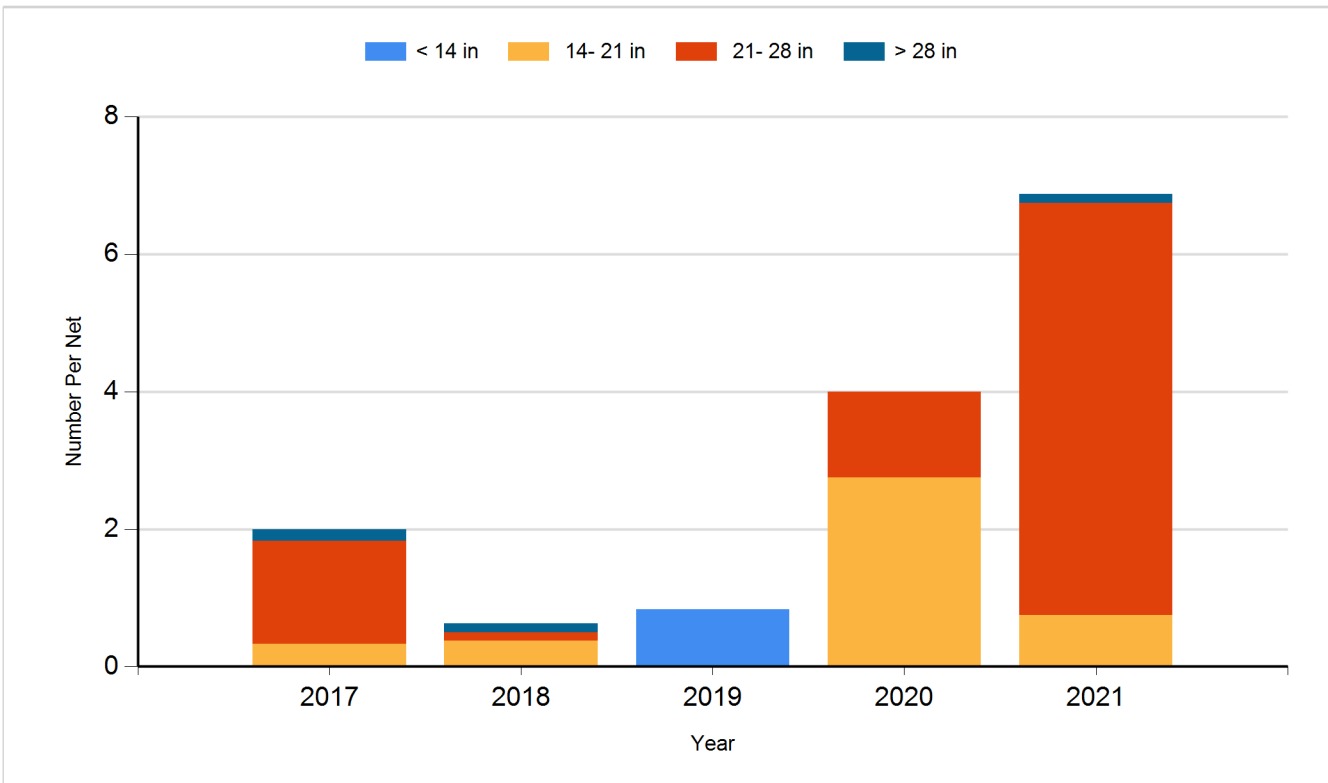
Species: Common Carp
Gear: AFS std gill net



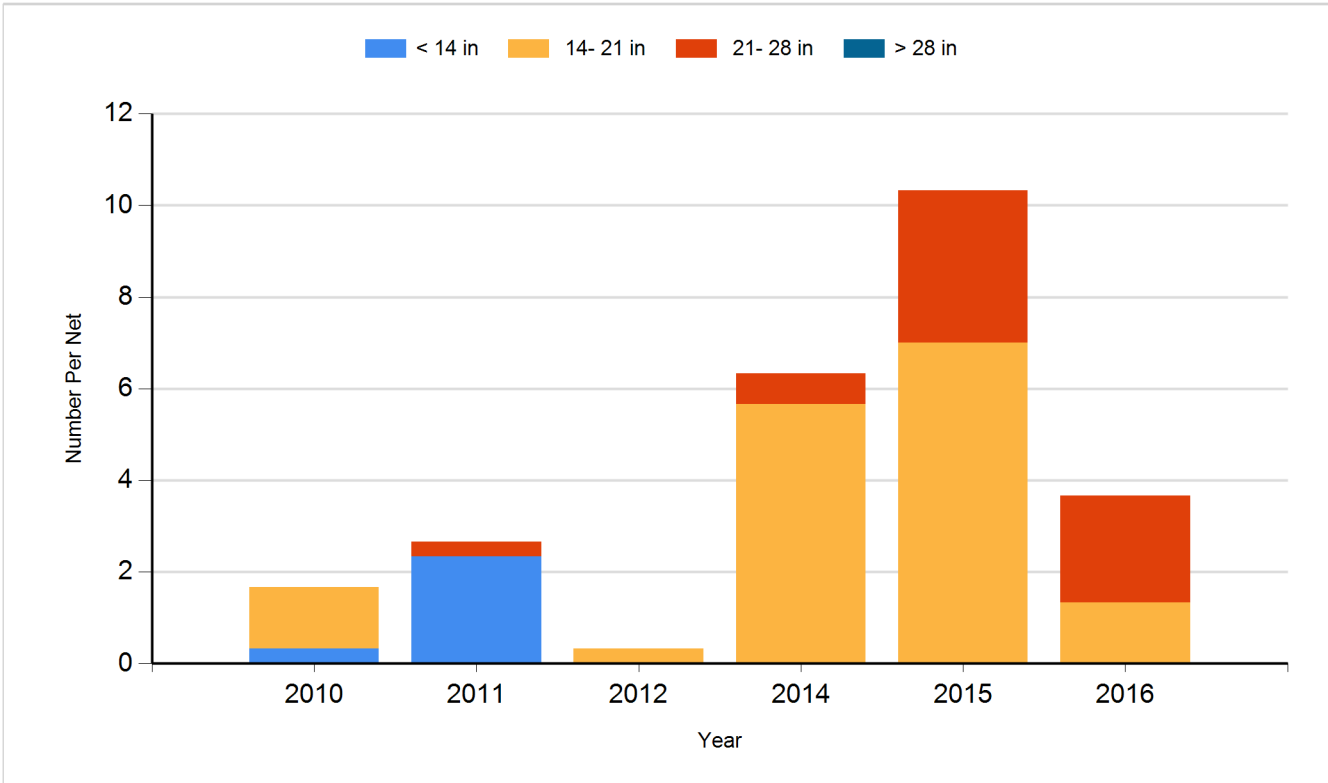
Species: Common Carp
Gear: std exp gill net



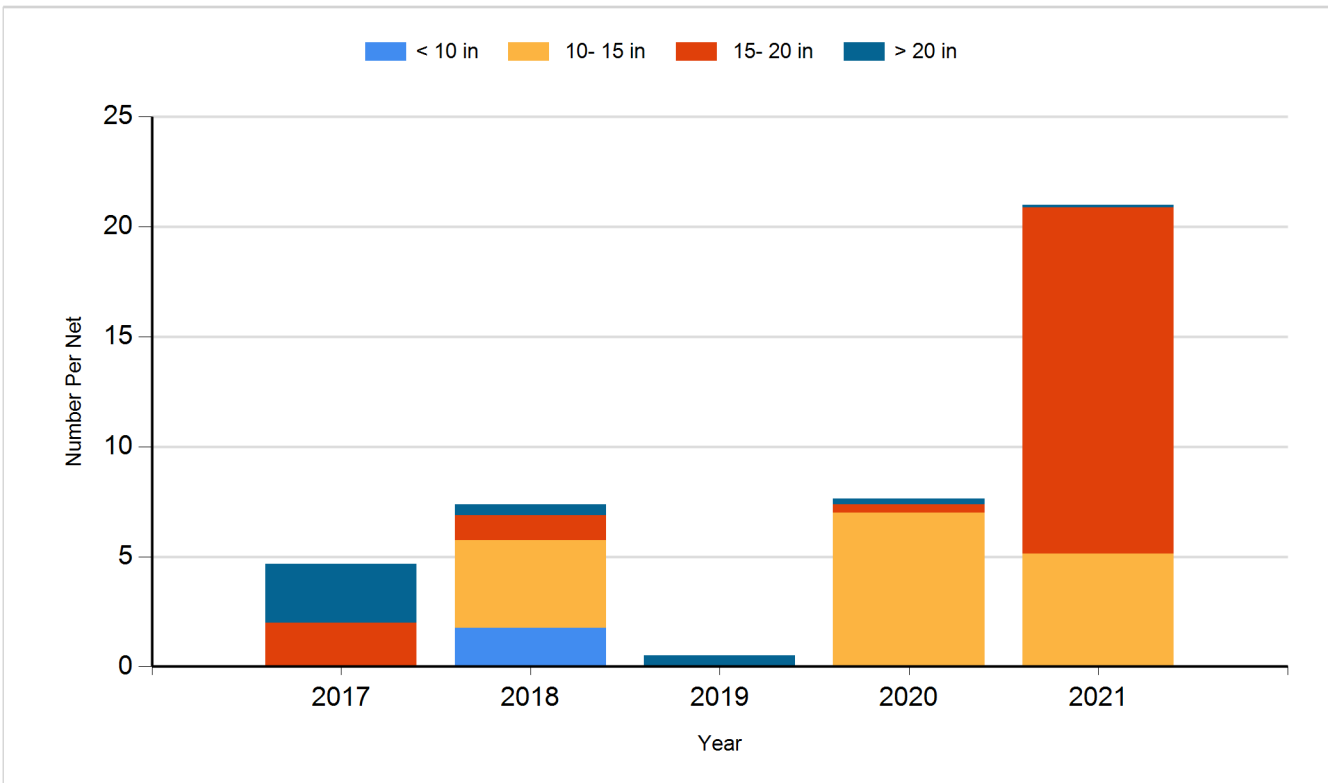
Species: Northern Pike
Gear: AFS std gill net



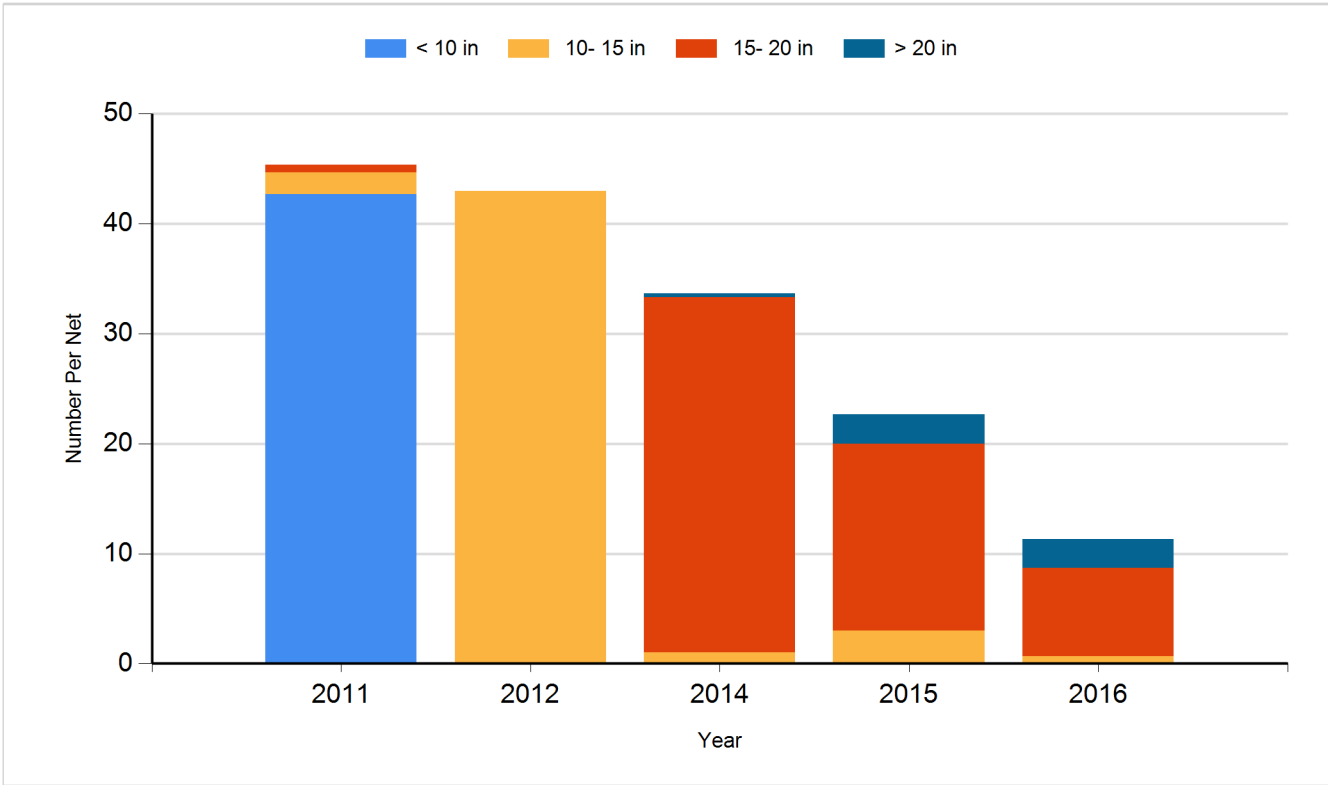
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Gear: std exp gill net



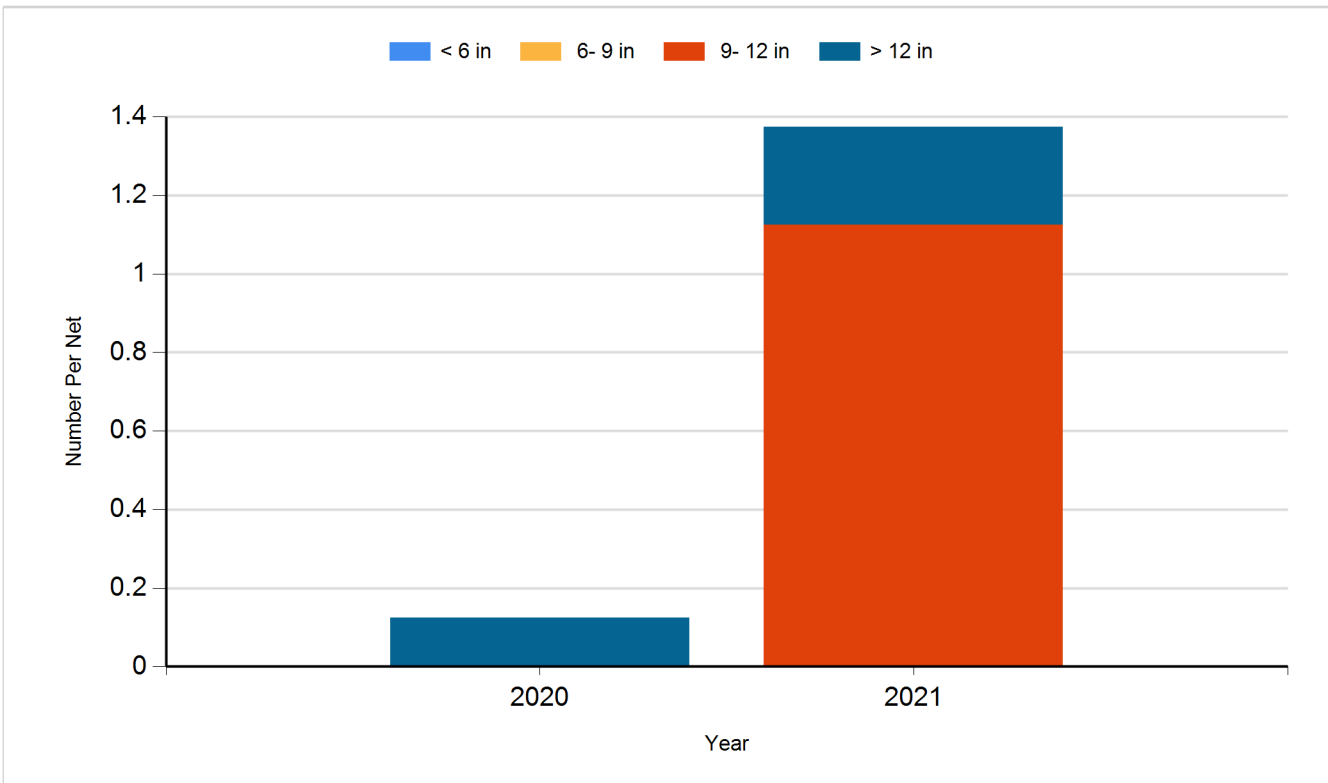
Species: Walleye
Gear: AFS std gill net



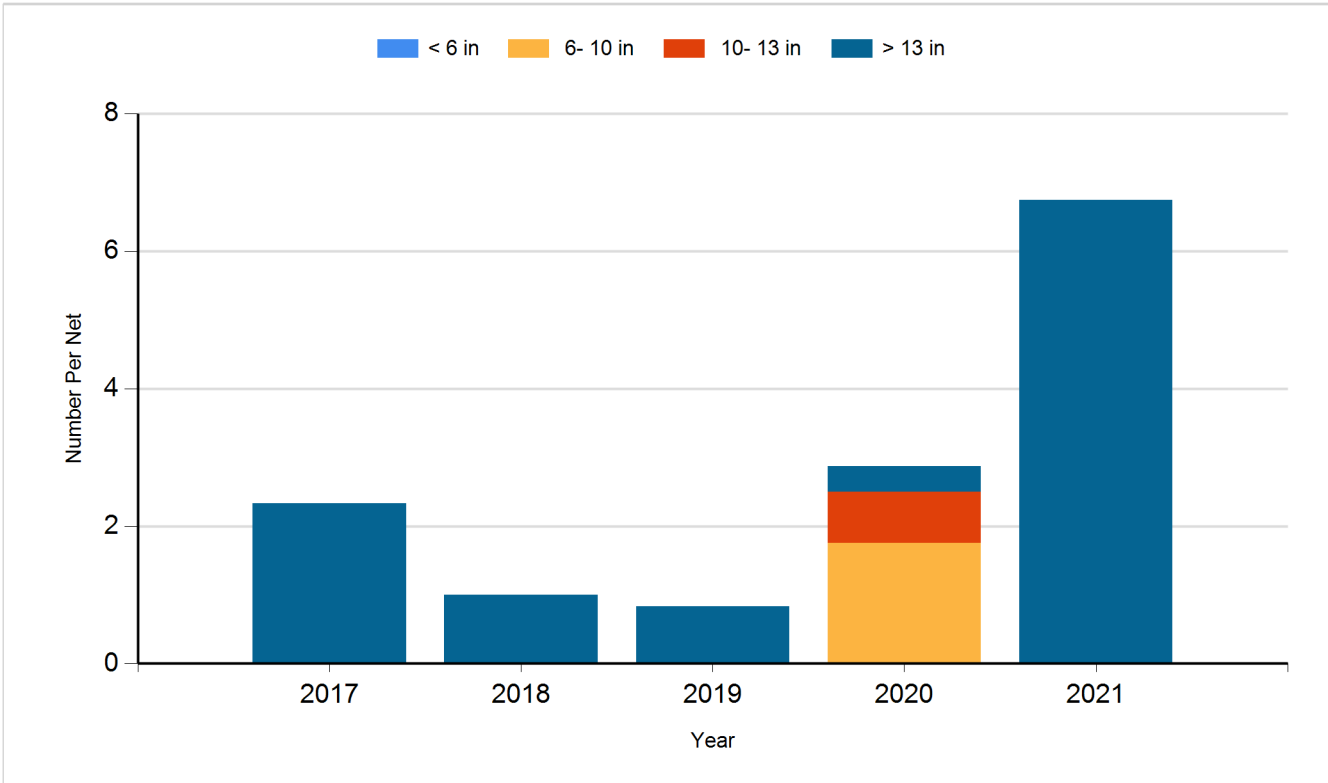
Species: Walleye
Gear: std exp gill net



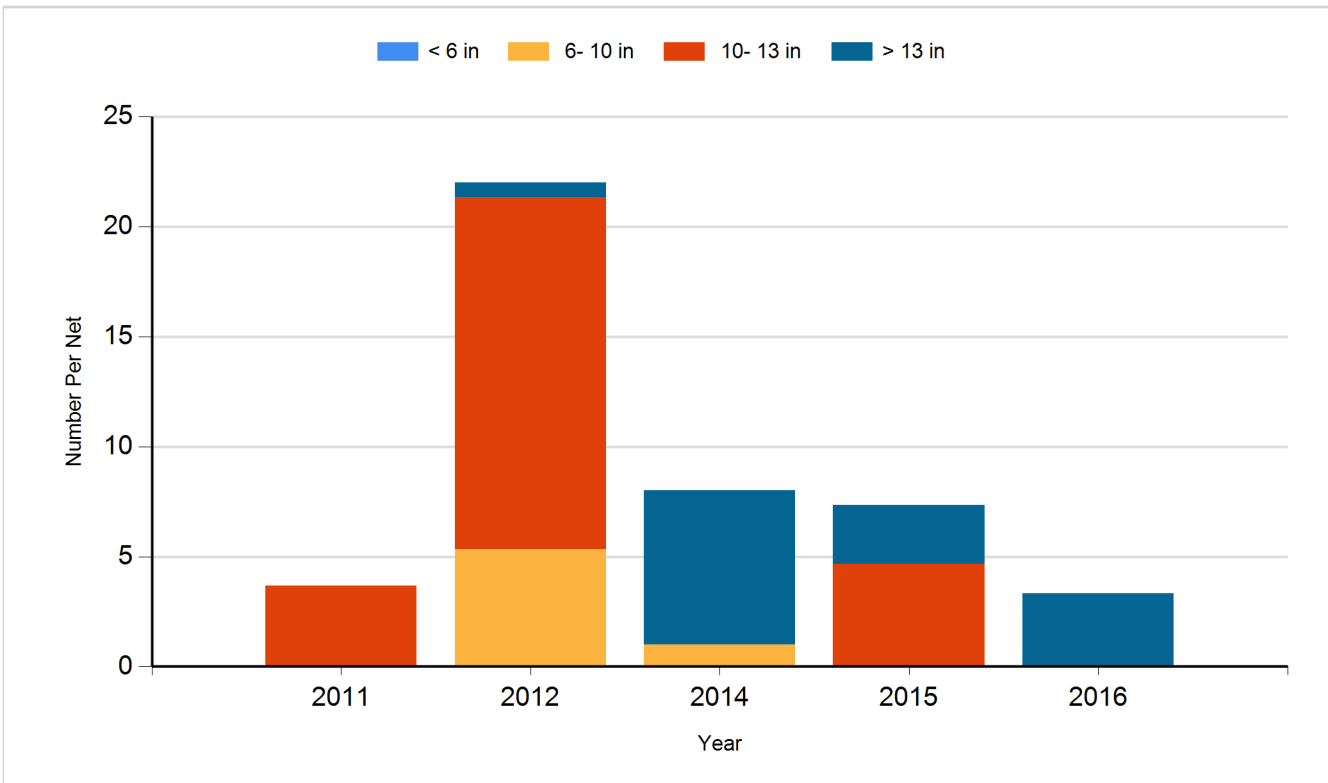
Species: White Bass
Gear: AFS std gill net



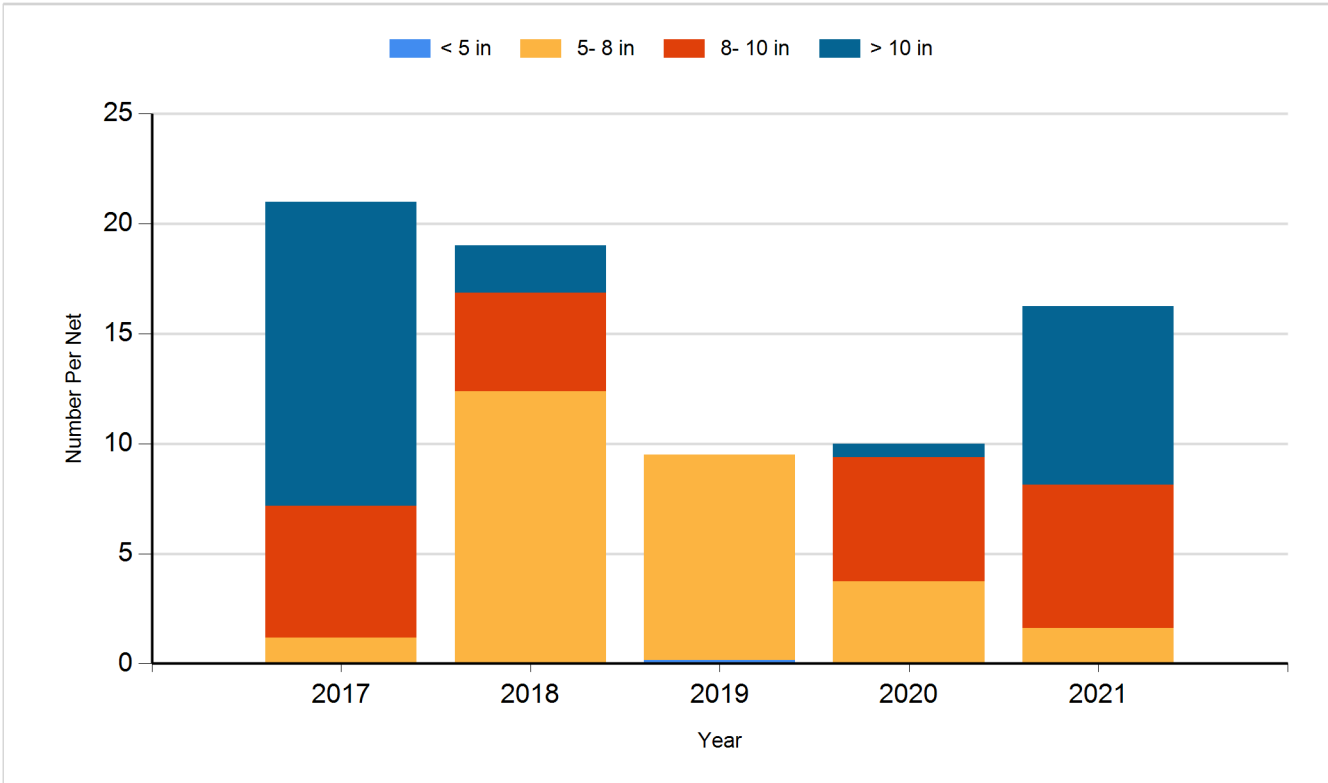
Species: White Sucker
Gear: AFS std gill net



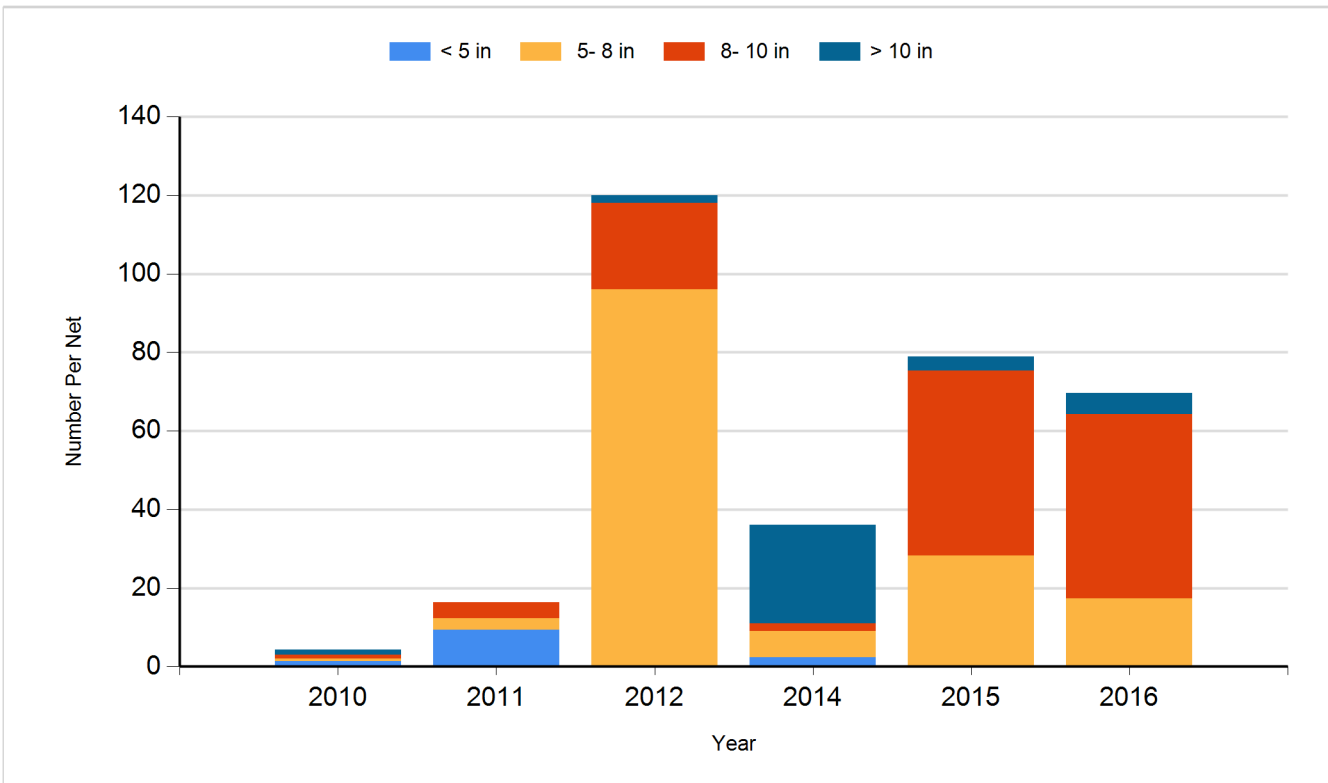
Species: White Sucker
Gear: std exp gill net



Species: Yellow Perch
Gear: AFS std gill net



Species: Yellow Perch
Gear: std exp gill net



Fish Stocking

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

Year	Species	Size	Number
2019	Walleye	Fry	4,500,000
2021	Walleye	Fry	4,600,000