

**SOUTH DAKOTA STATEWIDE FISHERIES SURVEY**  
**Francis Case, Charles Mix County**  
**FTR-Lake-6327-000**  
**2021**

**Lake Information**

**Name:** Francis Case  
**County:** Charles Mix  
**Surface Area:** 88,007 Acres

**Surveys and Investigations**

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

Gear	Date	Effort
AFS gill net (1/2 inch)	Aug 30, 2021	22 net-nights
AFS gill net (1/2 inch)	Aug 31, 2021	21 net-nights
AFS gill net (1/2 inch)	Sep 07, 2021	14 net-nights
AFS gill net (1/2 inch)	Sep 09, 2021	18 net-nights
AFS std gill net	Aug 30, 2021	22 net-nights
AFS std gill net	Aug 31, 2021	21 net-nights
AFS std gill net	Sep 07, 2021	14 net-nights
AFS std gill net	Sep 09, 2021	18 net-nights
boat shocker (night)	Jun 01, 2021	2700 seconds
boat shocker (night)	Jun 02, 2021	2700 seconds
boat shocker (night)	Jun 03, 2021	2700 seconds
boat shocker (night)	Jun 07, 2021	2700 seconds
boat shocker (night)	Jun 09, 2021	2700 seconds
fall night EF-WAE	Nov 01, 2021	7200 seconds
fall night EF-WAE	Nov 02, 2021	3600 seconds
fall night EF-WAE	Nov 03, 2021	3600 seconds
fall night EF-WAE	Oct 27, 2021	7200 seconds
large seine	Jul 19, 2021	28 hauls

## **Common Fish Species Present**

Gizzard Shad

Walleye

Smallmouth Bass

Emerald Shiner

Sauger

Yellow Perch

Channel Catfish

Freshwater Drum

Common Carp

White Bass

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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 Bullhead	2	0.0	0.0	50		0		81	3
	Bluegill	1	0.0	0.0	100		0		123	
	Channel Catfish	333	4.1	0.4	77	3	10	2	80	1
	Common Carp	91	1.2	0.3	58	7	5		87	1
	Flathead Catfish	2	0.0	0.0	50		0		84	6
	Freshwater Drum	55	0.7	0.2	85	8	26	9	88	2
	Gizzard Shad	44	0.0	0.0	0					
	Goldeye	95	0.0	0.0						
	Goldfish	1	0.0	0.0						
	Lake Herring	1	0.0	0.0						
	Northern Pike	2	0.0	0.0	100		0		74	0
	Paddlefish	3	0.0	0.0	0		0		89	14
	River Carpsucker	20	0.3	0.1	100		65	17	100	4
	Sauger	105	1.4	0.2	73	6	30	6	77	1
	Saugeye	1	0.0	0.0	100		0		72	
	Shorthead Redhorse	24	0.3	0.2	92		75	14	98	2
	Shortnose Gar	14	0.0	0.0						
	Shovelnose Sturgeon	2	0.0	0.0						
	Smallmouth Bass	68	0.9	0.4	85	7	38	9	104	2
	Smallmouth Buffalo	7	0.1	0.1	100		43		86	3
Walleye	388	5.1	0.7	48	3	3	1	83	0	
White Bass	26	0.3	0.1	100		81		98	4	
White Crappie	1	0.0	0.0	100		100		106		
Yellow Perch	21	0.3	0.1	19		5		89	4	
boat shocker (night)	Smallmouth Bass	583	138.4	20.3	47	2	16	2	93	0
large seine*	Bluegill	3	0.1	0.0						
	Brassy Minnow	3	0.1	0.0						
	Common Carp	6	0.2	0.0						
	Emerald Shiner	829	29.6	12.0						
	Freshwater Drum	45	1.6	0.1						
	Gizzard Shad	15954	569.8	33.3						

Gear	Species	Sample Size (n)	Abundance		Stock Density Indices			Condition		
			CPUE	CI-80	PSD	CI-80	PSD-P	CI-80	Wr	CI-80
large seine*	Goldeye	10	0.4	0.0						
	Johnny Darter	5	0.2	0.1						
	Largemouth Bass	4	0.1	0.0						
	Red Shiner	4	0.1	0.0						
	River Carpsucker	6	0.2	0.0						
	Sauger	2	0.1	0.1						
	Silverband Shiner	17	0.6	0.2						
	Smallmouth Bass	171	6.1	0.1						
	Spottail Shiner	25	0.9	0.0						
	Walleye	59	2.1	0.9						
	White Bass	27	1.0	0.0						
	Yellow Perch	164	5.9	0.2						

## 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										
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Avg
AFS gill net (1/2 inch)*	Bigmouth Buffalo						0.0	0.0	0.0	0.0	0.0	0.00
	Black Crappie						0.0	0.0	0.0	0.0	0.0	0.00
	Channel Catfish						0.1	0.0	0.1	0.2	0.1	0.10
	Common Carp						0.2	0.0	0.0	0.0	0.1	0.06
	Emerald Shiner						0.0	0.0	0.0	0.0	0.0	0.00
	Freshwater Drum						0.2	0.3	0.4	0.2	0.2	0.26
	Gizzard Shad						1.2	0.4	1.6	2.6	0.5	1.26
	Goldeye						0.2	0.0	0.2	0.1	0.0	0.10
	Lake Herring						0.0	0.0	0.0	0.0	0.0	0.00
	Northern Pike						0.0	0.0	0.0	0.0	0.0	0.00
	Sauger						0.2	0.4	0.1	0.2	0.1	0.20
	Shorthead Redhorse						0.0	0.0	0.0	0.0	0.0	0.00
	Shortnose Gar						0.0	0.0	0.0	0.0	0.0	0.00
	Silverband Shiner						0.0	0.0	0.0	0.0	0.0	0.00
	Smallmouth Bass						0.0	0.0	0.0	0.0	0.0	0.00
	Spottail Shiner						0.1	0.2	0.0	0.2	0.0	0.10
	Walleye						0.8	1.3	0.5	0.8	0.6	0.80
	White Bass						0.1	0.1	0.0	0.1	0.0	0.06
White Crappie						0.0	0.0	0.0	0.0	0.0	0.00	
Yellow Perch						0.1	0.5	1.0	0.4	0.2	0.44	
AFS std gill net	Bigmouth Buffalo						0.0	0.0	0.0	0.0	0.0	0.00
	Black Bullhead						0.0	0.0	0.0	0.4	0.0	0.08
	Black Crappie						0.0	0.0	0.0	0.0	0.0	0.00
	Bluegill						0.0	0.0	0.0	0.0	0.0	0.00
	Channel Catfish						3.7	3.1	4.2	3.9	4.1	3.80
	Common Carp						1.1	0.8	0.5	0.7	1.2	0.86
	Flathead Catfish						0.0	0.0	0.0	0.0	0.0	0.00
	Freshwater Drum						1.4	1.1	1.4	0.6	0.7	1.04
	Gizzard Shad						0.8	0.1	0.2	0.0	0.0	0.22
	Goldeye						0.0	0.0	0.0	0.0	0.0	0.00
	Goldfish						0.0	0.0	0.0	0.0	0.0	0.00
	Lake Herring						0.0	0.0	0.1	0.0	0.0	0.02
	Largemouth Bass						0.0	0.0	0.0	0.0	0.0	0.00
	Northern Pike						0.0	0.0	0.0	0.1	0.0	0.02

Gear	Species	CPUE										
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Avg
AFS std gill net	Paddlefish						0.0	0.0	0.0	0.0	0.0	0.00
	River Carpsucker						0.1	0.2	0.1	0.3	0.3	0.20
	Sauger						1.7	1.4	1.1	1.4	1.4	1.40
	Saugeye						0.0	0.0	0.0	0.0	0.0	0.00
	Shorthead Redhorse						0.0	0.0	0.0	0.1	0.3	0.08
	Shortnose Gar						0.0	0.0	0.0	0.0	0.0	0.00
	Shovelnose Sturgeon						0.0	0.0	0.1	0.0	0.0	0.03
	Smallmouth Bass						1.2	0.4	0.9	1.8	0.9	1.04
	Smallmouth Buffalo						0.3	0.1	0.1	0.1	0.1	0.14
	Walleye						4.3	3.6	5.4	8.0	5.1	5.28
	White Bass						1.4	0.6	0.4	0.8	0.3	0.70
	White Crappie						0.0	0.0	0.0	0.1	0.0	0.02
Yellow Perch						0.4	0.2	0.7	0.7	0.3	0.46	
boat shocker (night)	Smallmouth Bass	80.7	66.7	86.0	68.9	118.4	109.9	89.9	79.0	152.8	138.4	99.07
fall night EF-WAE*	Sauger							34.2	7.0	0.0	14.2	13.85
	Walleye							117.1	97.3	130.7	145.0	122.53
large seine*	Bigmouth Buffalo	0.0	0.1	0.1	0.2	0.0	0.0	0.0	1.7	0.2	0.0	0.23
	Black Bullhead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
	Black Crappie	0.2	0.0	0.2	0.1	0.0	0.0	0.1	7.4	0.0	0.0	0.80
	Bluegill	0.0	0.0	0.0	0.2	2.2	0.0	0.0	0.2	0.0	0.1	0.27
	Bluntnose Minnow	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.01
	Brassy Minnow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.1	0.10
	Channel Catfish	0.3	0.0	0.1	0.1	0.2	0.0	0.1	0.0	0.3	0.0	0.10
	Common Carp	0.0	0.1	0.4	0.1	0.0	0.6	0.2	3.5	0.0	0.2	0.52
	Creek Chub	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.01
	Emerald Shiner	21.7	2.9	14.3	80.7	46.7	26.4	14.9	5.8	9.6	29.6	25.25
	Fathead Minnow	0.0	0.1	0.0	0.0	0.0	0.0	0.0	22.9	0.3	0.0	2.32
	Flathead Catfish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
	Flathead Chub	0.4	0.0	0.2	0.1	0.0	0.0	0.2	0.3	0.0	0.0	0.12
	Freshwater Drum	31.8	3.0	1.1	4.0	19.5	1.1	0.4	1.1	4.9	1.6	6.86
	Gizzard Shad	843.9	69.9	75.6	195.9	315.1	1,208.1	861.2	1,438.1	908.3	569.8	648.59
	Golden Shiner	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
	Goldeye	0.0	0.3	1.4	0.3	2.9	1.3	0.2	1.4	1.9	0.4	1.01
	Johnny Darter	0.2	1.6	1.6	0.5	0.1	0.4	0.3	1.4	0.2	0.2	0.66
	Lake Herring	0.0	0.0	0.0	0.0	0.0	0.1	0.7	0.0	0.0	0.0	0.09
	Largemouth Bass	0.0	0.3	0.1	0.0	0.0	0.0	0.1	0.7	0.0	0.1	0.13



Gear	Species	CPUE										Avg	
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		
large seine*	Northern Redbelly Dace	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
	Orangespotted Sunfish	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.4	0.0	0.0	0.0	0.05
	Plains Minnow	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.15
	Rainbow Smelt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.01
	Red Shiner	0.8	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.13
	River Carpsucker	1.2	0.3	0.1	0.0	0.3	0.1	0.0	0.7	1.3	0.2	0.41	0.41
	Sand Shiner	0.0	0.0	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.06
	Sauger	0.3	0.2	0.2	0.3	0.1	0.1	0.4	0.0	0.1	0.1	0.1	0.18
	Shorthead Redhorse	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.04
	Shortnose Gar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
	Silverband Shiner	0.5	0.6	0.9	0.4	0.1	0.0	0.0	0.3	0.1	0.6	0.35	0.35
	Smallmouth Bass	1.8	2.1	2.5	2.5	2.3	4.3	6.4	9.8	3.9	6.1	4.18	4.18
	Smallmouth Buffalo	0.6	0.2	0.1	0.1	0.0	0.1	0.0	0.8	0.0	0.0	0.19	0.19
	Spotfin Shiner	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
	Spottail Shiner	11.8	0.4	1.5	10.4	1.8	1.6	1.7	0.8	0.3	0.9	3.13	3.13
	Spotted Bass	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
	Walleye	2.4	1.4	2.4	0.3	0.8	1.4	0.6	4.4	1.2	2.1	1.70	1.70
	Western Silvery Minnow	0.0	1.5	0.2	14.3	0.0	0.3	1.1	0.0	0.2	0.0	1.77	1.77
	White Bass	36.5	9.8	1.6	36.8	4.1	14.4	3.5	18.1	18.2	1.0	14.38	14.38
White Crappie	0.0	0.1	0.0	0.1	0.0	0.0	0.1	1.2	0.0	0.0	0.16	0.16	
Yellow Perch	4.0	10.3	8.7	10.1	0.8	4.8	1.6	72.1	0.6	5.9	11.88	11.88	
std exp gill net	Bigmouth Buffalo	0.0	0.0	0.1	0.0	0.0						0.02	
	Black Bullhead	0.0	0.0	0.0	0.0	0.0						0.00	
	Black Crappie	0.1	0.0	0.0	0.0	0.0						0.02	
	Bluegill	0.0	0.0	0.0	0.0	0.0						0.00	
	Brown Trout	0.0	0.0	0.0	0.0	0.0						0.00	
	Channel Catfish	2.8	3.1	3.2	4.7	5.3						3.82	
	Chinook Salmon	0.0	0.0	0.0	0.0	0.0						0.00	
	Common Carp	1.8	1.3	1.0	1.8	2.0						1.58	
	Flathead Catfish	0.0	0.0	0.0	0.0	0.0						0.00	
	Freshwater Drum	0.5	0.7	0.4	0.2	0.3						0.42	
	Gizzard Shad	0.1	0.6	0.0	0.3	4.4						1.08	
	Goldeye	0.0	0.0	0.0	0.0	0.0						0.00	
	Lake Herring	0.0	0.0	0.0	0.0	0.0						0.00	
	Northern Pike	0.4	0.1	0.0	0.1	0.0						0.12	
	Orangespotted Sunfish	0.0	0.0	0.0	0.0	0.0						0.00	
River Carpsucker	0.1	0.0	0.1	0.1	0.1						0.08		

		CPUE										
Gear	Species	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Avg
std exp gill net	Sauger	7.4	5.9	5.4	3.7	4.1						5.30
	Shorthead Redhorse	0.2	0.3	0.2	0.3	0.2						0.24
	Shortnose Gar	0.0	0.0	0.0	0.0	0.0						0.00
	Shovelnose Sturgeon	0.0	0.0	0.0	0.0	0.0						0.00
	Smallmouth Bass	0.6	0.2	0.2	1.0	0.1						0.42
	Smallmouth Buffalo	0.0	0.0	0.1	0.1	0.1						0.06
	Spottail Shiner	0.0	0.0	0.0	0.0	0.0						0.00
	Walleye	9.4	5.8	6.2	3.9	5.0						6.06
	Western Silvery Minnow	0.0	0.0	0.0	0.0	0.0						0.00
	White Bass	0.1	0.3	0.1	0.2	0.8						0.30
	White Crappie	0.0	0.0	0.0	0.0	0.1						0.02
	Yellow Perch	1.4	0.4	0.8	0.9	1.2						0.94

## 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	Channel Catfish	PSD							59	60	55	67	77
		PSD-P							5	7	6	9	10
		Wr							80	81	89	82	80
	Common Carp	PSD							60	92	88	55	58
		PSD-P							3	5	7	5	5
		Wr							83	83	84	85	87
	Gizzard Shad	PSD							99	100	100	0	0
		Wr							96	100	108	68	
	Sauger	PSD							86	74	65	83	73
		PSD-P							49	36	24	43	30
		Wr							77	78	86	86	77
	Smallmouth Bass	PSD							70	73	76	86	85
		PSD-P							18	33	33	37	38
		Wr							104	106	107	104	104
	Walleye	PSD							63	38	47	53	48
		PSD-P							5	3	4	2	3
		Wr							81	83	91	86	83
	White Bass	PSD							99	88	100	100	100
		PSD-P							80	86	78	78	81
		Wr							97	100	106	101	98
	Yellow Perch	PSD							51	17	28	38	19
PSD-P								3	0	2	2	5	
Wr								83	90	85	83	89	
boat shocker (night)	Smallmouth Bass	PSD	42	44	41	37	46	45	59	58	53	47	
		PSD-P	7	12	12	12	16	14	18	35	18	16	
		Wr	84		91	92	97	91	94	96	100	93	
std exp gill net	Channel Catfish	PSD	43	51	43	46	52						
		PSD-P	1	0	3	2	3						
		Wr	84	84	81	79	83						
	Common Carp	PSD	86	89	97	86	68						
		PSD-P	8	6	3	2	6						
		Wr	89	87	84	83	84						

Gear	Species	Index	Year										
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
std exp gill net	Gizzard Shad	PSD	0	0	0	88	32						
		Wr	77	103		94	89						
	Sauger	PSD	73	65	73	74	78						
		PSD-P	35	16	19	32	29						
		Wr	74	73	76	76	80						
	Smallmouth Bass	PSD	47	40	29	62	67						
		PSD-P	33	0	0	12	0						
		Wr	107	97	109	100	110						
	Walleye	PSD	40	20	33	60	46						
		PSD-P	9	4	2	9	4						
		Wr	82	82	84	84	86						
	White Bass	PSD	100	100	100	100	50						
		PSD-P	50	89	100	100	27						
		Wr	105	102	103	97	107						
	Yellow Perch	PSD	28	8	22	8	21						
		PSD-P	5	8	0	0	3						
		Wr	84	82	84	79	80						

## Back-Calculated Lengths

Mean species back-calculated total length (mm) at age, standard error (SE), and sample size (N).

Species: Smallmouth Bass

Year Class	Age	N	Mean back-calculated length (SE) at age																	
			1	2	3	4	5	6	7	8	9	10								
2020	1	16	122 (6.6)																	
2019	2	91	110 (2.3)	184 (3.2)																
2018	3	126	111 (1.9)	180 (2.9)	248 (3.1)															
2017	4	86	108 (1.8)	181 (3.6)	259 (4.4)	312 (4.5)														
2016	5	36	102 (2.2)	169 (5.4)	244 (6.3)	312 (5.8)	353 (6)													
2015	6	8	100 (5.1)	150 (6.4)	221 (12.8)	293 (14.3)	339 (13.4)	373 (14.5)												
2014	7	1	84	136	183	262	335	403	424											
2013	8	1	101	144	190	228	326	375	412	436										
Weighted Mean		365	109	179	250	310	350	376	418	436										
Year Class	Age	N	11	12	13	14	15	16	17	18	19	20								
2020	1	16																		
2019	2	91																		
2018	3	126																		
2017	4	86																		
2016	5	36																		
2015	6	8																		
2014	7	1																		
2013	8	1																		
Weighted Mean		365																		

## Length at Capture

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

Species: Channel Catfish

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2016	152	100 (1)	226 (5)	302 (12)	324 (7)	351 (14)	395 (21)	416 (26)	425 (11)	487 (12)	535 (41)

Species: Sauger

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2021	105	269 (28)	355 (45)	404 (26)	448 (5)	454 (1)	401 (1)				
2020	110	292 (28)	374 (55)	421 (18)	408 (4)	457 (4)					473 (1)
2019	90	289 (44)	367 (33)	428 (9)	402 (1)	413 (2)			441 (1)		
2018	109	305 (39)	367 (29)	390 (19)	409 (14)	465 (4)		384 (3)		541 (1)	
2017	140	305 (41)	368 (40)	403 (42)	451 (8)	450 (6)	450 (2)	404 (2)			
2016	110	295 (37)	355 (38)	405 (13)	388 (9)	406 (10)	435 (2)	479 (1)			
2015	98	258 (25)	360 (33)	363 (5)	396 (26)	430 (4)	443 (4)				365 (1)
2014	177	261 (21)	293 (36)	350 (89)	390 (10)	400 (21)					
2013	159	237 (16)	300 (86)	371 (36)	402 (20)	433 (1)					
2012	199	267 (61)	360 (69)	405 (58)	459 (4)	455 (2)	440 (4)				462 (1)

Species: Smallmouth Bass

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2021	583	150 (22)	204 (169)	272 (217)	328 (123)	371 (44)	386 (9)	434 (1)	452 (1)		
2020	1119	133 (174)	203 (467)	293 (281)	336 (138)	386 (36)	399 (18)	411 (5)			
2019	323	167 (21)	219 (108)	303 (76)	365 (87)	402 (20)	438 (8)	461 (4)	459 (1)	543 (1)	
2018	378	127 (27)	218 (110)	297 (148)	341 (77)	382 (12)	389 (4)				
2017	490	129 (14)	213 (273)	301 (137)	360 (42)	392 (17)	443 (6)	425 (1)			
2016	590	121 (66)	199 (253)	289 (176)	348 (58)	390 (17)	414 (15)	424 (3)	413 (1)	484 (1)	
2015	432	108 (84)	187 (210)	277 (63)	314 (44)	353 (22)	406 (8)	447 (1)			
2014	333	110 (43)	194 (98)	269 (104)	303 (71)	360 (14)	369 (2)				

Mean Length (expanded sample number) at capture by age

Year	N	1	2	3	4	5	6	7	8	9	10+
2013	307	128 (10)	182 (56)	234 (145)	316 (74)	344 (15)	404 (3)	417 (2)	440 (1)		
2012	475	123 (50)	197 (200)	279 (162)	318 (44)	389 (17)	415 (2)				

Species: Walleye

Mean Length (expanded sample number) at capture by age

Year	N	1	2	3	4	5	6	7	8	9	10+
2021	387	298 (36)	349 (175)	419 (122)	448 (33)	483 (10)	478 (4)	523 (3)		481 (1)	594 (4)
2020	662	290 (203)	381 (250)	419 (149)	447 (31)	443 (10)	512 (8)		475 (1)	584 (5)	579 (5)
2019	443	297 (158)	383 (197)	423 (47)	461 (8)	479 (11)	501 (2)	531 (3)	498 (4)	504 (6)	565 (6)
2018	299	297 (143)	377 (80)	407 (30)	423 (26)		576 (2)	468 (9)	534 (2)	492 (3)	521 (4)
2017	346	295 (76)	378 (83)	405 (91)	448 (6)	445 (13)	472 (37)	464 (16)	470 (15)	443 (1)	538 (4)
2016	142	273 (38)	353 (47)	411 (7)	450 (13)	463 (26)	488 (7)	467 (3)			446 (1)
2015	135	237 (46)	334 (9)	394 (13)	398 (37)	466 (7)	474 (6)	484 (3)	496 (3)		509 (11)
2014	208	255 (11)	316 (36)	353 (89)	392 (27)	405 (31)	441 (3)	482 (1)	519 (2)	509 (5)	505 (3)
2013	175	232 (21)	312 (107)	376 (31)	430 (8)	469 (2)	533 (3)	526 (1)	526 (1)		504 (1)
2012	298	256 (114)	350 (76)	398 (48)	477 (10)	475 (5)	475 (7)	513 (26)	513 (8)	465 (1)	526 (3)

## 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)
Channel Catfish Gill Net	2017	123	81 (1.2)	162	80 (0.7)	14	79 (2.5)	2	87 (8.3)
	2018	103	81 (0.7)	135	81 (0.7)	16	87 (3.0)	1	90
	2019	151	88 (0.7)	167	89 (0.7)	16	95 (3.1)	3	103 (6.0)
	2020	105	78 (0.9)	182	83 (0.8)	27	93 (2.6)	3	98 (3.8)
	2021	71	78 (1.1)	202	81 (0.6)	26	85 (2.3)	5	85 (5.9)
Common Carp Gill Net	2017	34	85 (2.0)	49	81 (1.1)	3	75 (6.6)	0	
	2018	5	94 (2.7)	56	82 (1.2)	3	80 (2.9)	0	
	2019	5	83 (2.1)	34	85 (1.5)	3	79 (3.7)	0	
	2020	25	86 (1.2)	27	86 (3.0)	3	83 (5.6)	0	
	2021	38	84 (1.2)	48	89 (1.1)	5	83 (3.1)	0	
Sauger Gill Net	2017	19	79 (1.2)	53	78 (1.1)	68	76 (1.3)	0	
	2018	31	81 (1.0)	44	79 (0.8)	41	76 (0.8)	1	71
	2019	32	86 (2.7)	37	86 (1.0)	22	85 (1.4)	0	
	2020	19	77 (1.6)	44	91 (8.3)	47	84 (1.0)	0	
	2021	28	77 (1.5)	46	76 (1.0)	31	78 (1.1)	0	
Smallmouth Bass Electro Fishing	2017	227	91 (1.0)	129	92 (0.9)	49	90 (1.3)	7	90 (2.3)
	2018	139	97 (1.7)	137	93 (0.6)	58	90 (1.3)	3	82 (1.8)
	2019	126	93 (0.8)	72	96 (1.0)	92	99 (1.1)	13	96 (2.2)
	2020	361	101 (0.6)	265	100 (0.5)	123	98 (0.8)	15	95 (2.1)
	2021	273	93 (0.5)	164	94 (0.6)	74	95 (1.1)	8	95 (1.5)
Walleye Gill Net	2017	127	83 (0.4)	203	81 (0.4)	17	73 (1.7)	0	
	2018	183	83 (0.3)	101	83 (0.7)	10	75 (3.4)	0	

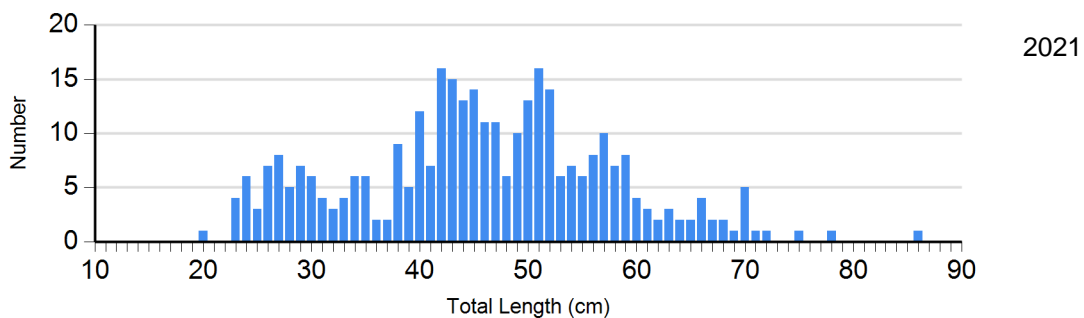
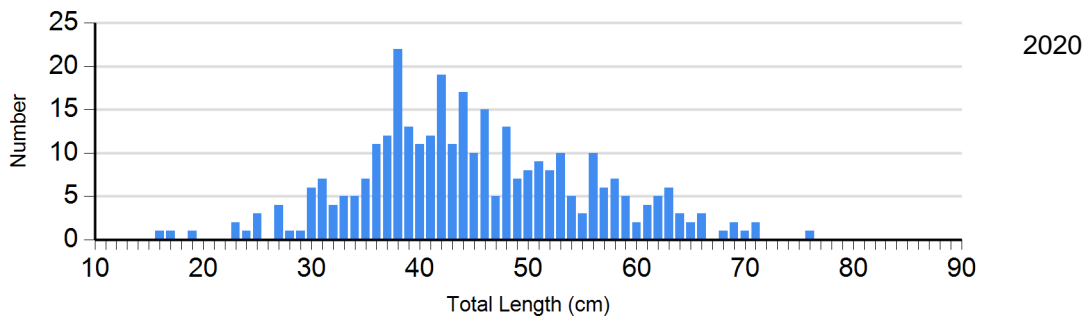
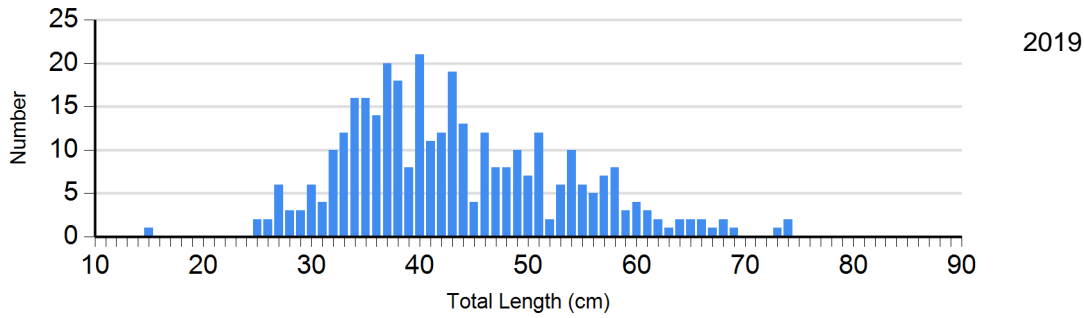
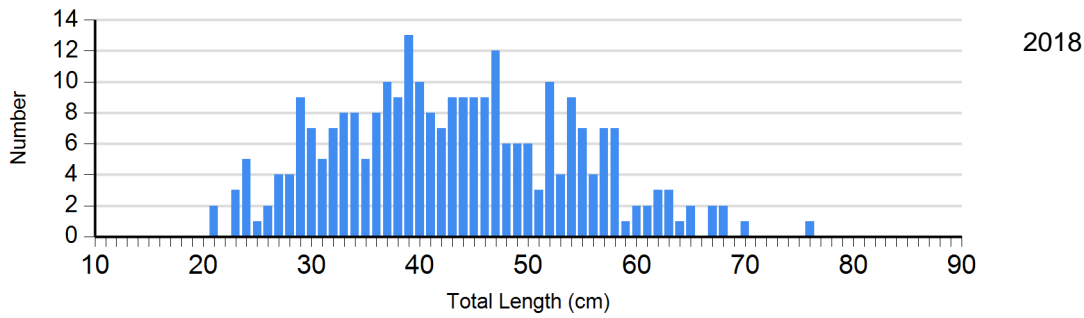
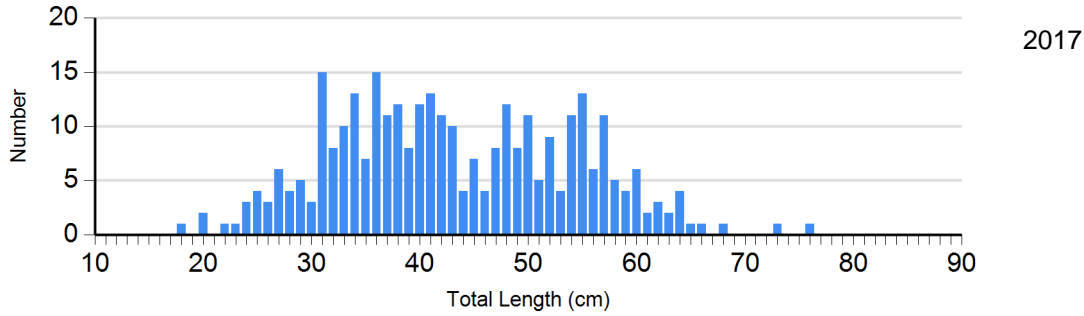


Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Walleye Gill Net	2019	233	92 (0.4)	188	91 (0.5)	17	87 (1.7)	0	
	2020	307	87 (0.4)	327	86 (0.4)	9	83 (2.5)	4	86 (14.8)
	2021	201	84 (0.4)	175	82 (0.5)	9	75 (1.6)	1	77
White Bass Gill Net	2017	1	77	21	100 (1.4)	38	104 (1.4)	50	92 (1.3)
	2018	6	99 (4.0)	1	101	22	103 (1.5)	20	96 (2.9)
	2019	0		8	107 (2.5)	19	107 (1.4)	9	103 (3.2)
	2020	0		14	107 (1.0)	27	102 (1.5)	24	98 (1.7)
	2021	0		5	103 (1.9)	13	102 (2.0)	8	87 (6.9)
Yellow Perch Gill Net	2017	17	86 (1.9)	17	79 (1.4)	1	91	0	
	2018	15	90 (2.8)	3	86 (6.8)	0		0	
	2019	38	85 (1.1)	14	86 (1.8)	1	79	0	
	2020	37	85 (1.2)	22	81 (1.1)	1	63	0	
	2021	17	93 (3.2)	3	82 (2.7)	1	48	0	

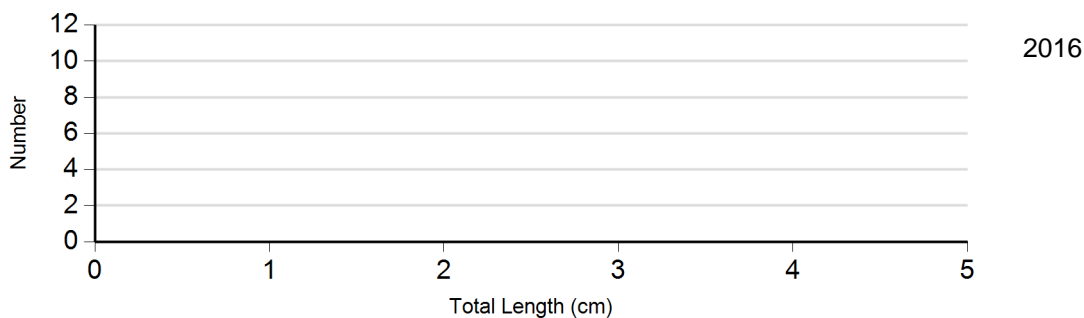
# Length Frequency Distribution

Length frequency histogram of species sampled by year.

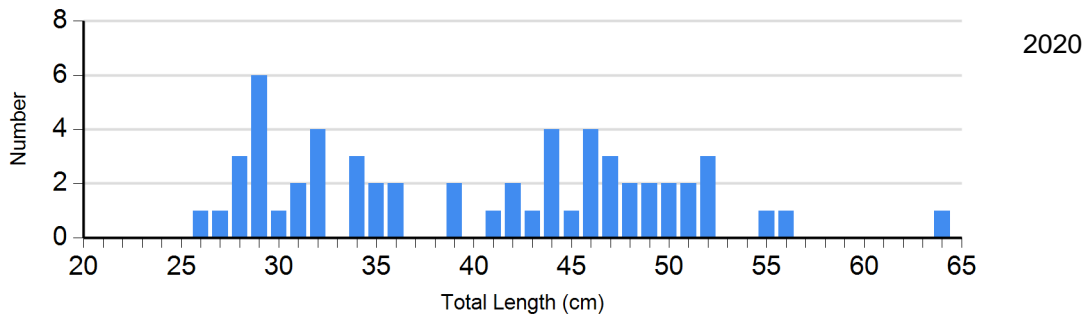
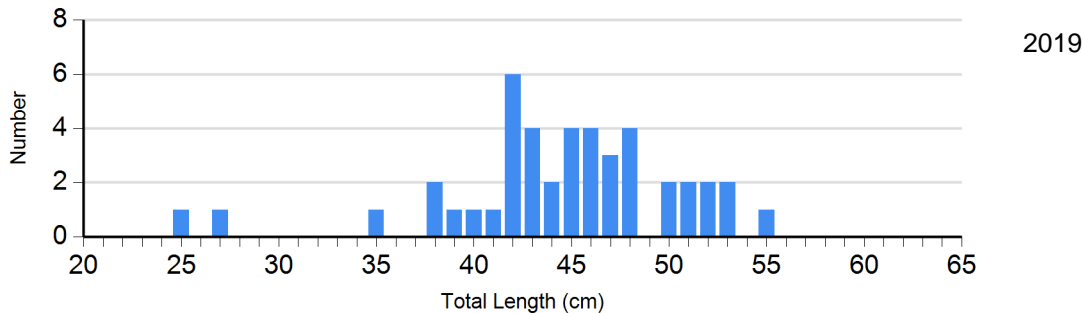
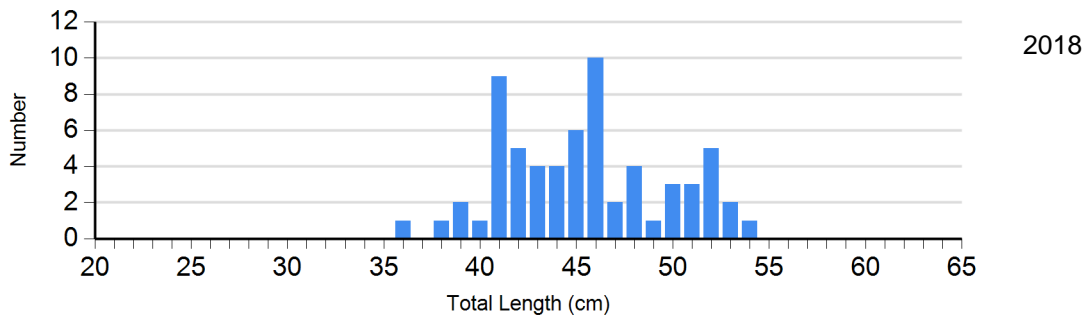
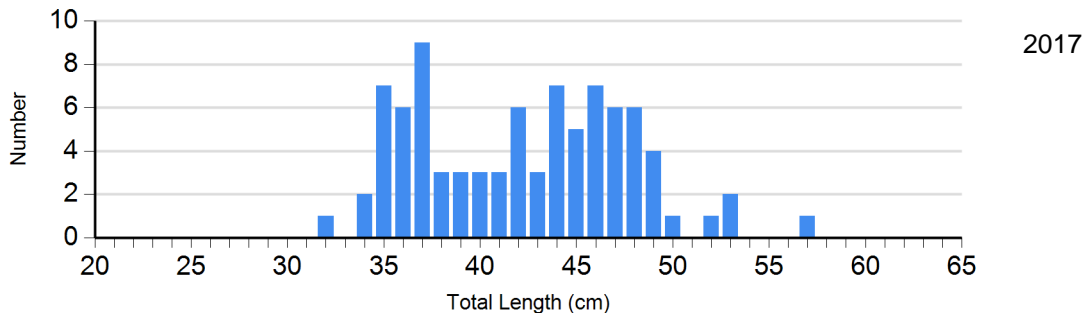
Species: Channel Catfish  
Gear: AFS std gill net

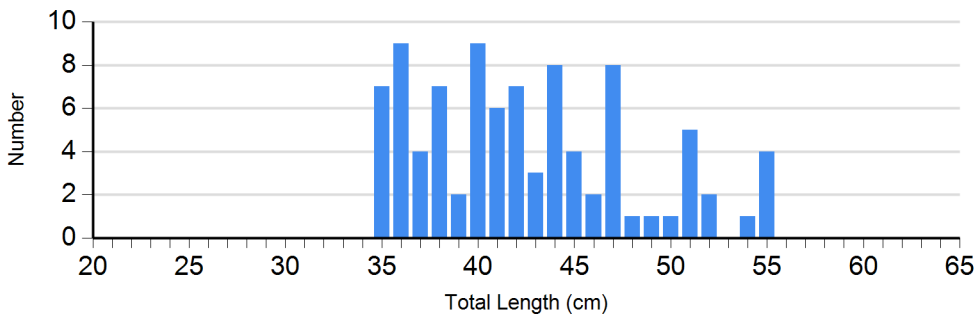


Species: Channel Catfish  
Gear: std exp gill net



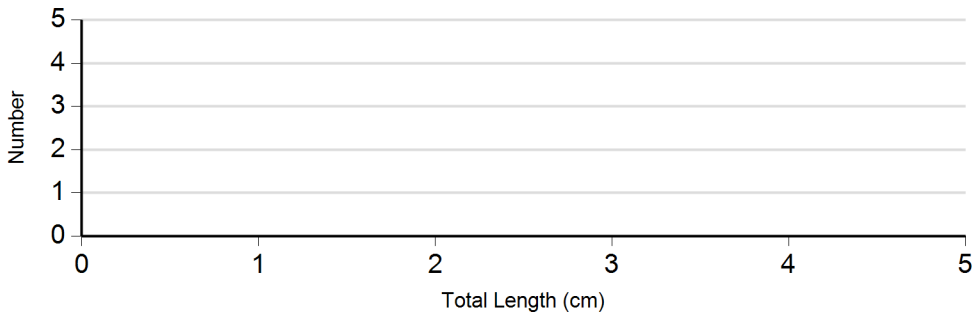
Species: Common Carp  
Gear: AFS std gill net





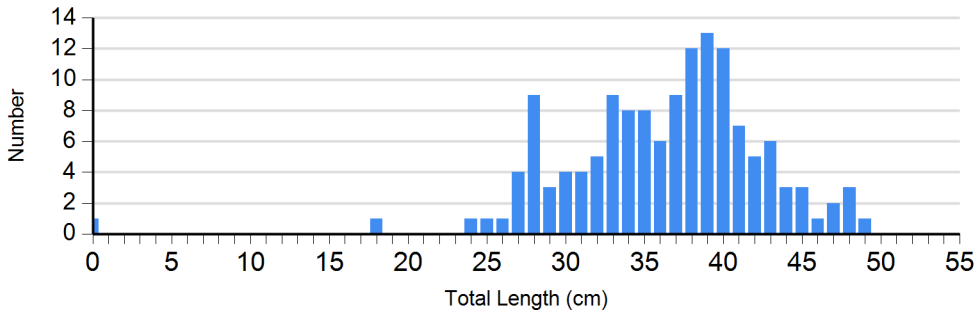
2021

Species: Common Carp  
Gear: std exp gill net

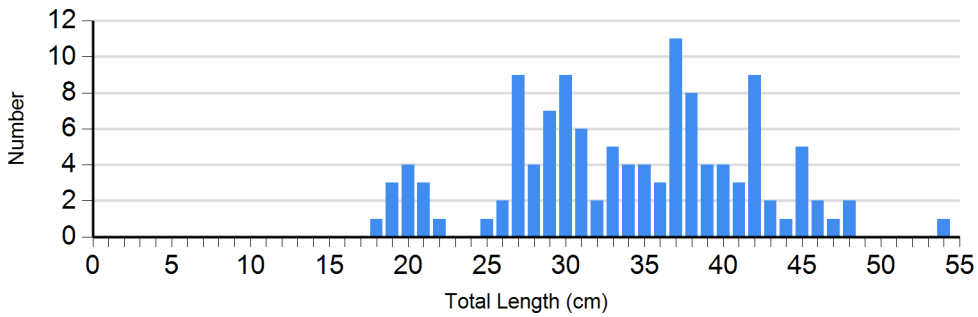


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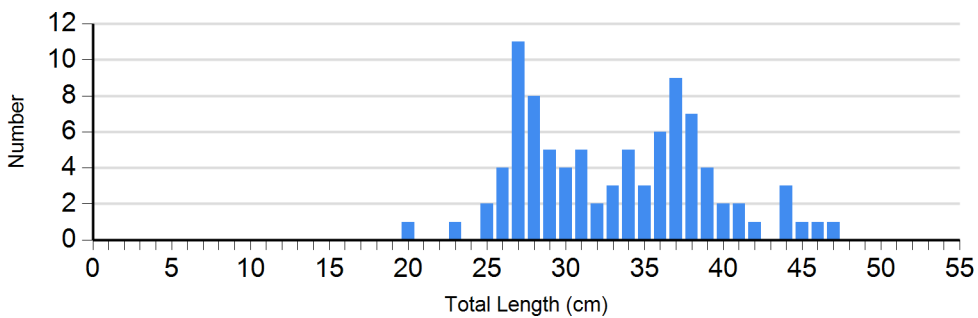
Species: Sauger  
Gear: AFS std gill net



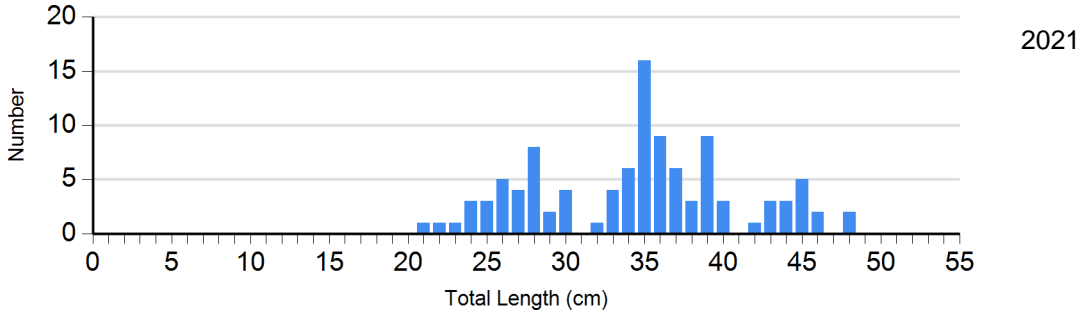
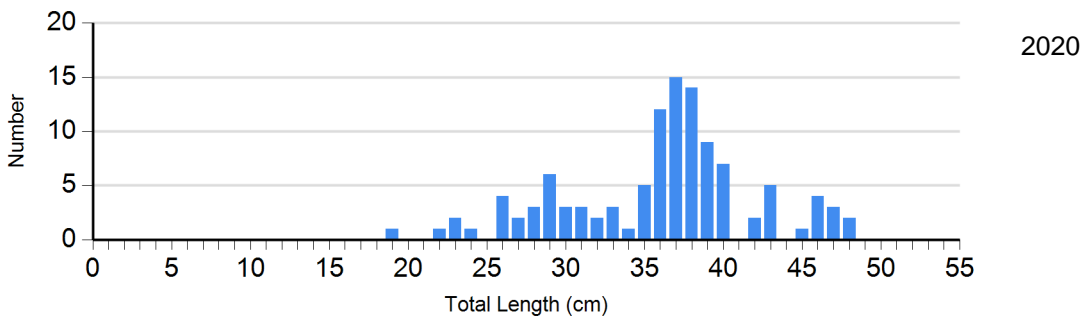
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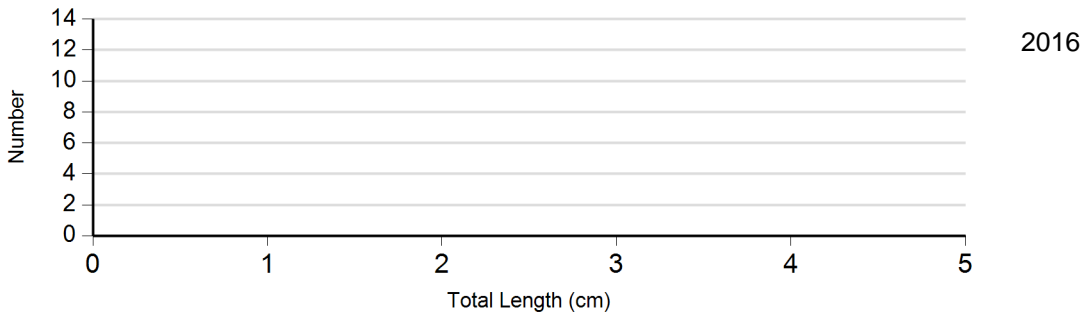
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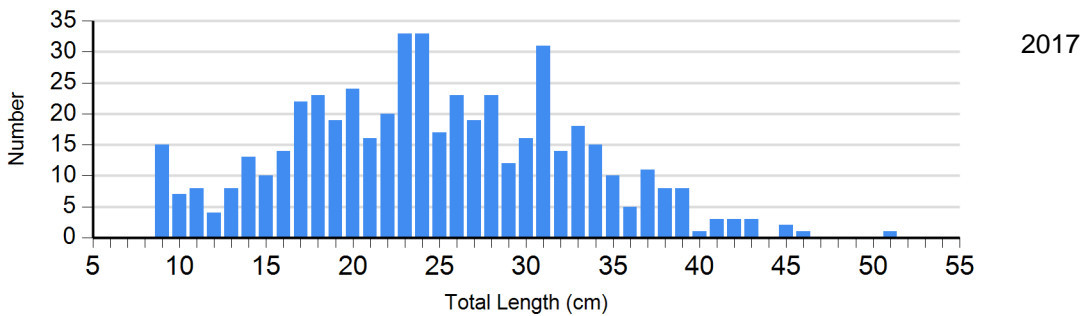
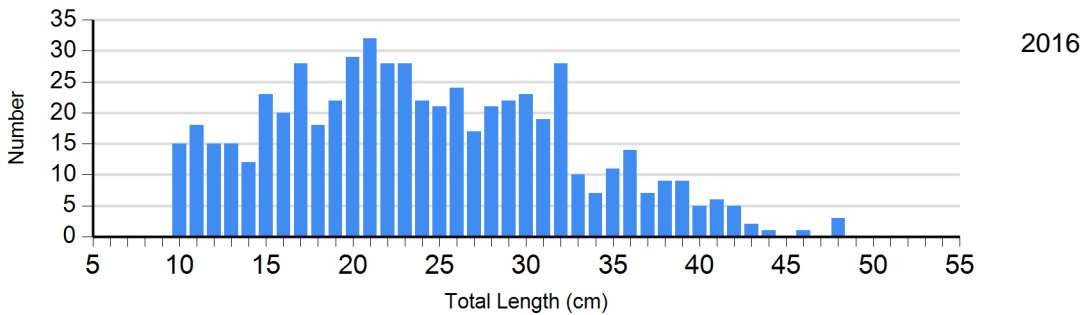
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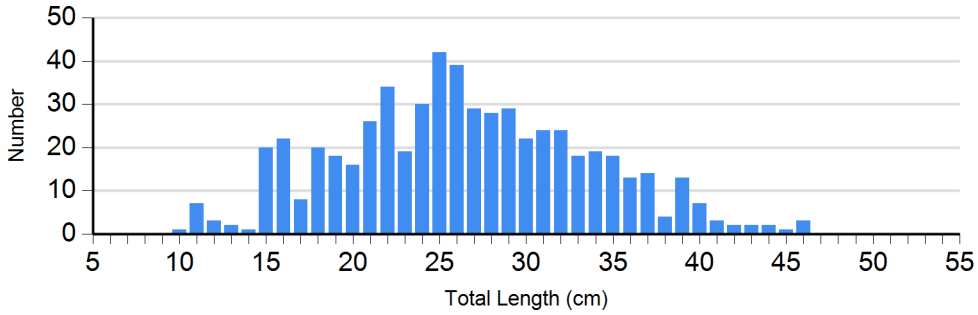
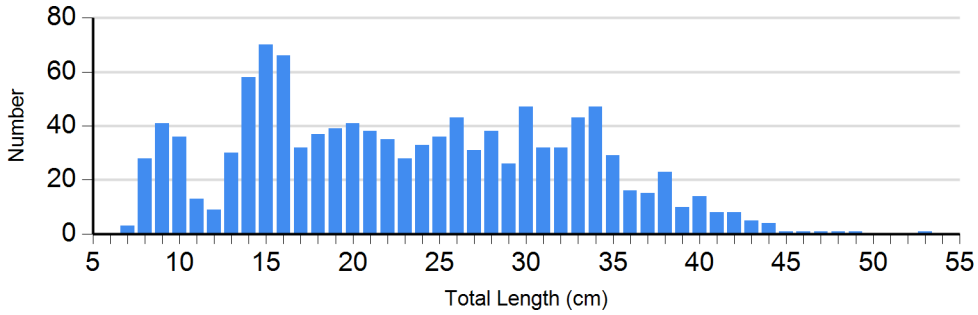
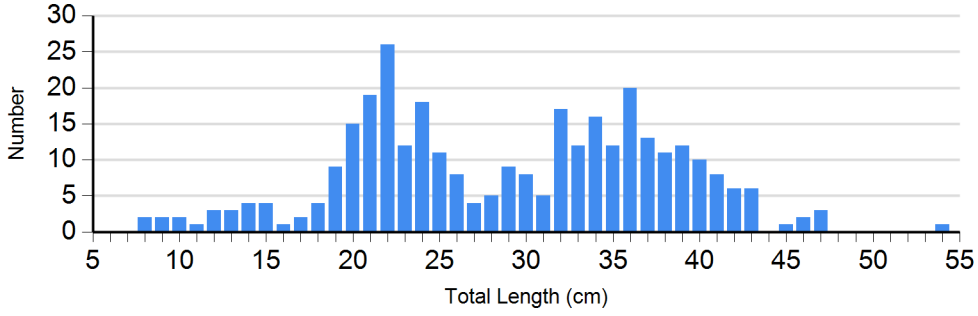
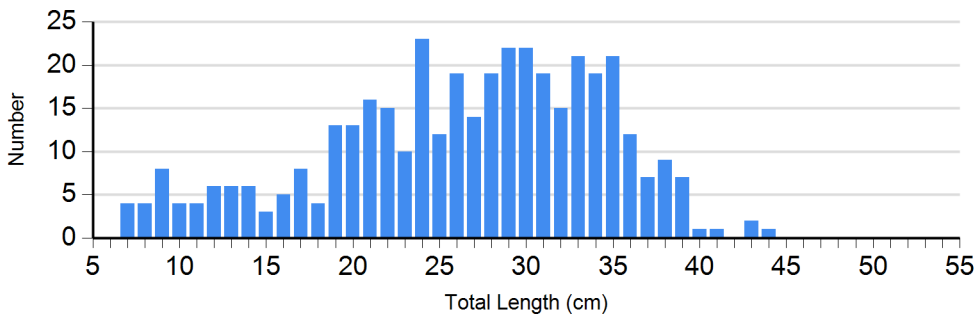


Species: Sauger  
Gear: std exp gill net

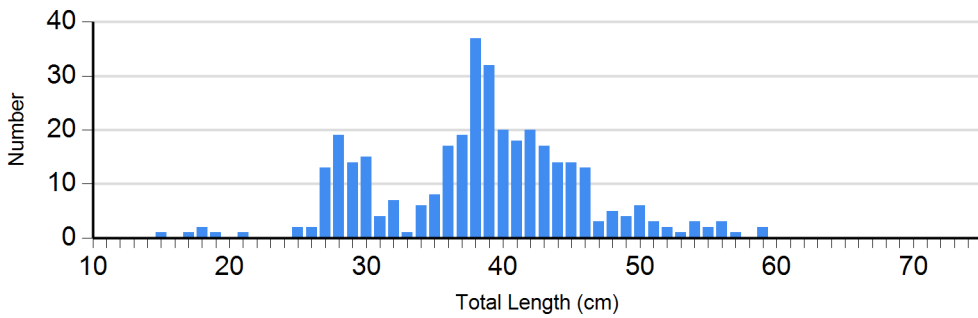


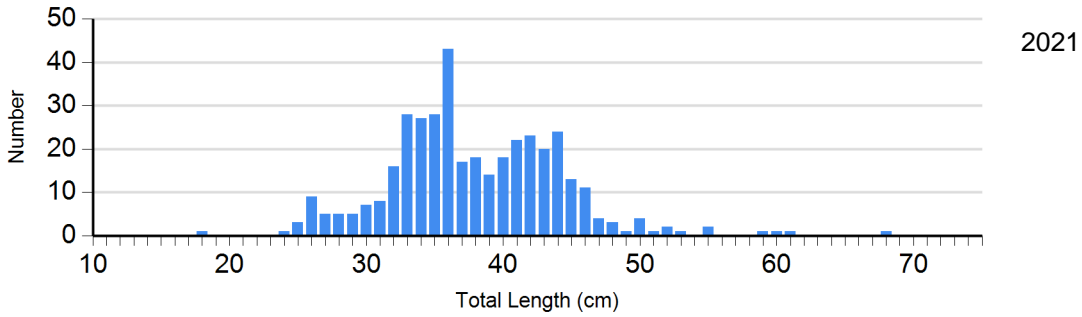
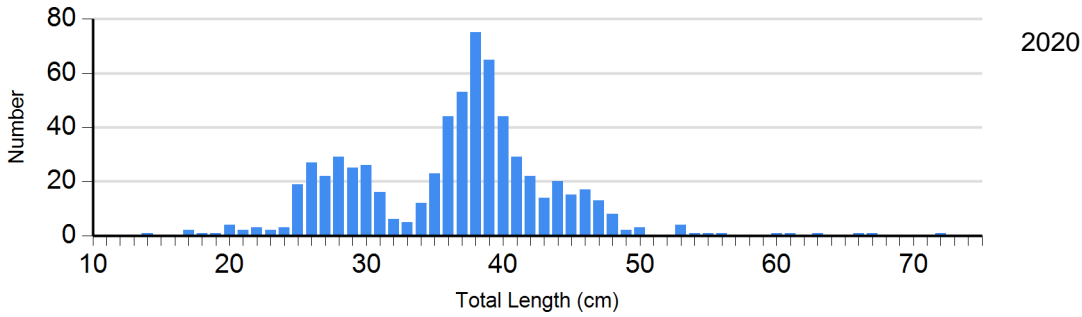
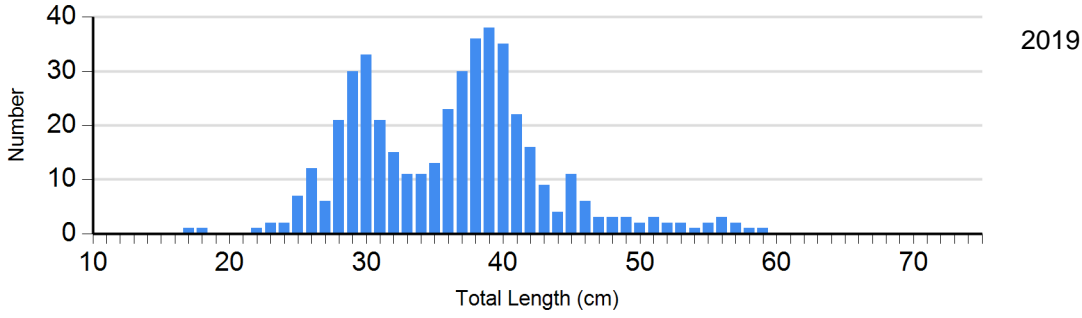
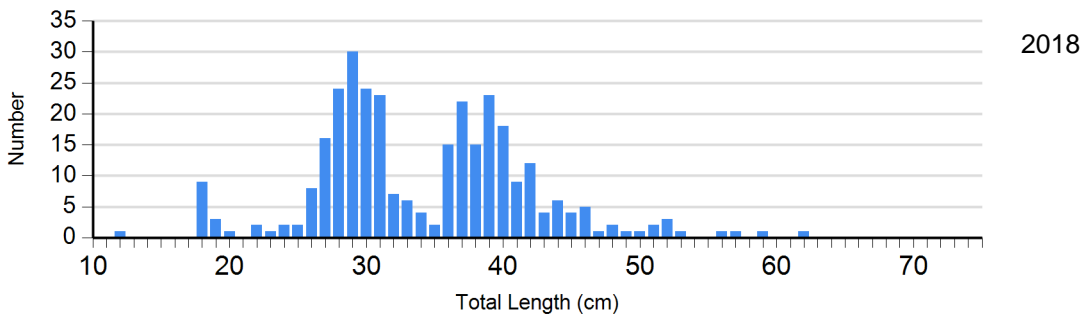
Species: Smallmouth Bass  
Gear: boat shocker (night)



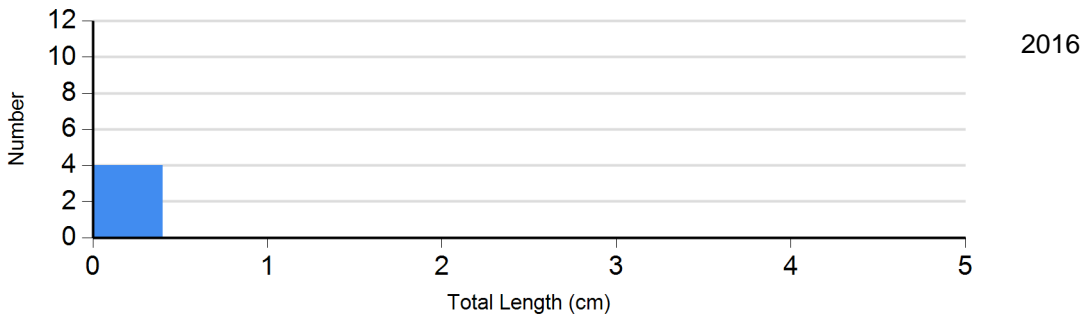


Species: Walleye  
 Gear: AFS std gill net

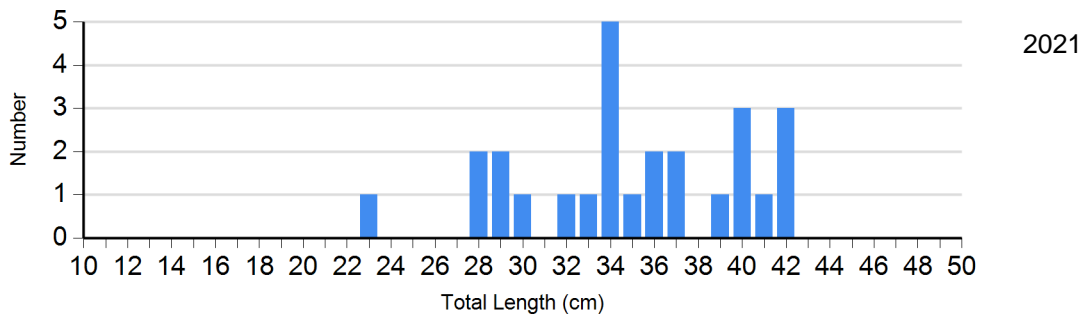
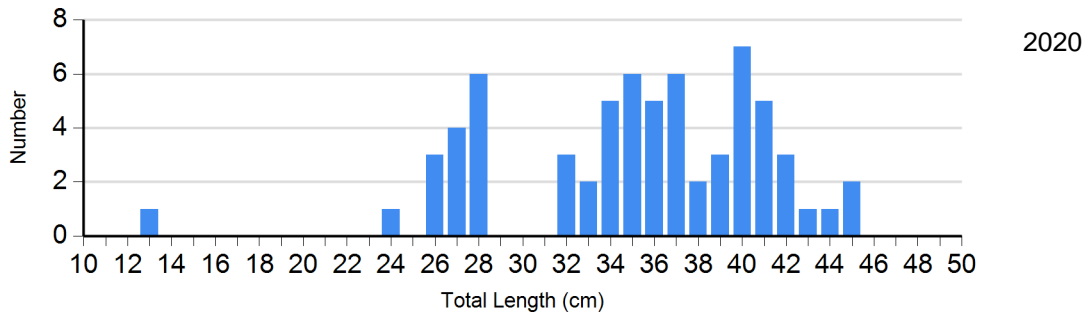
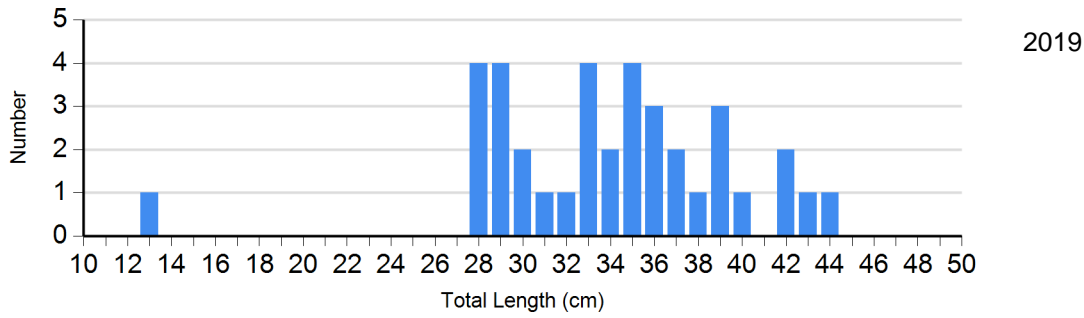
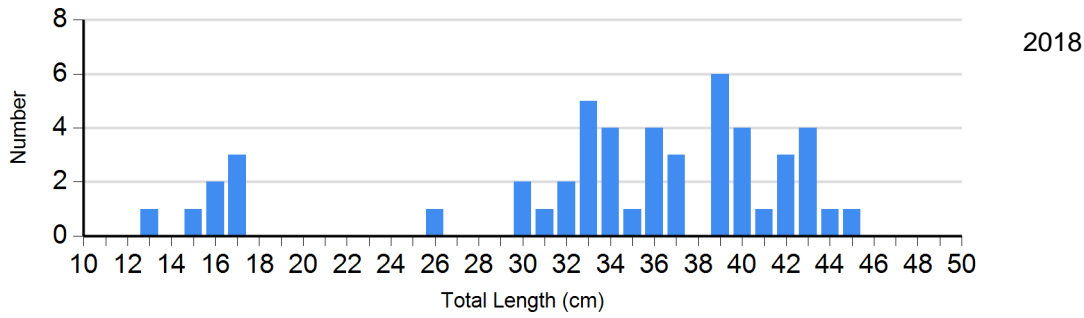
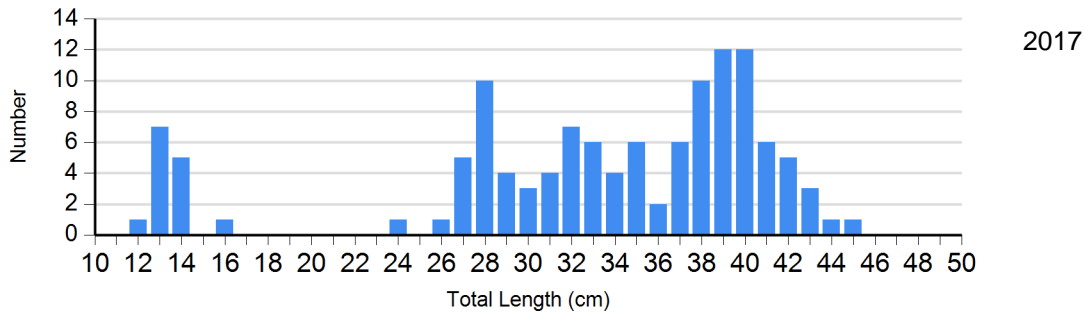




Species: Walleye  
 Gear: std exp gill net

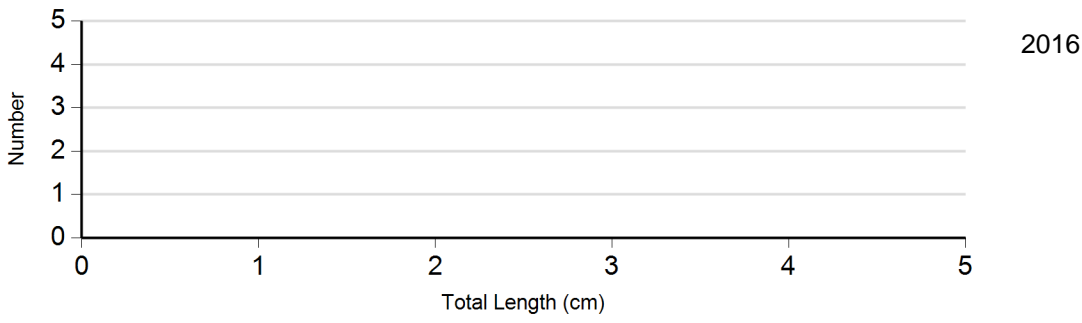


Species: White Bass  
Gear: AFS std gill net

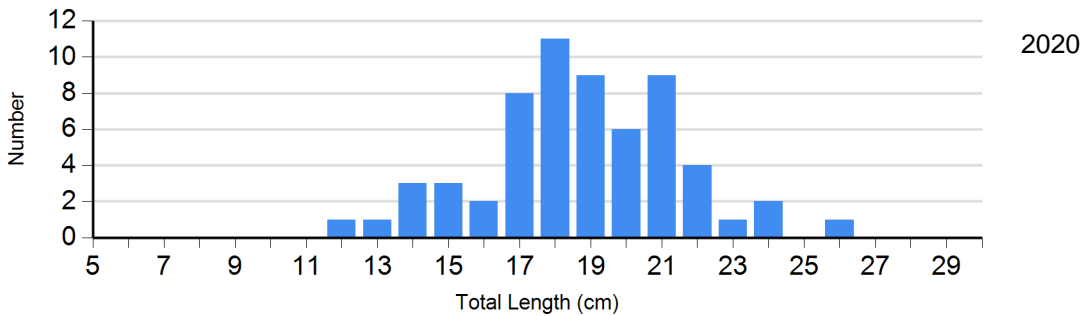
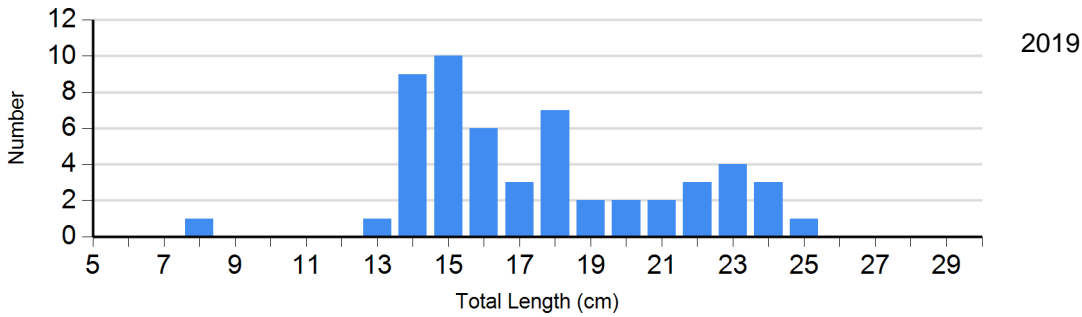
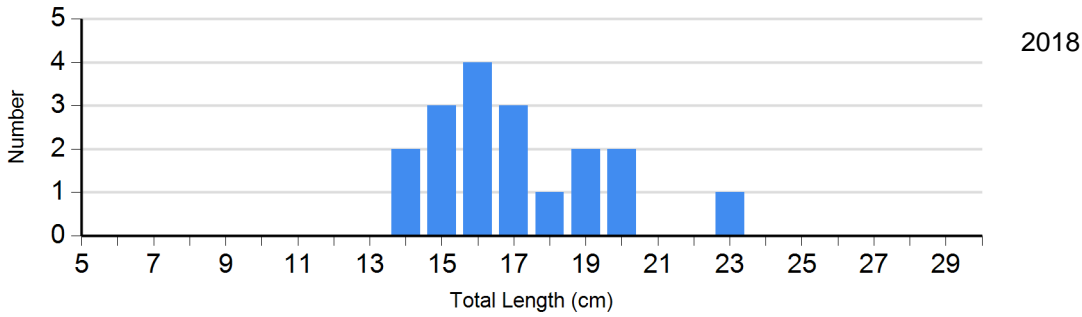
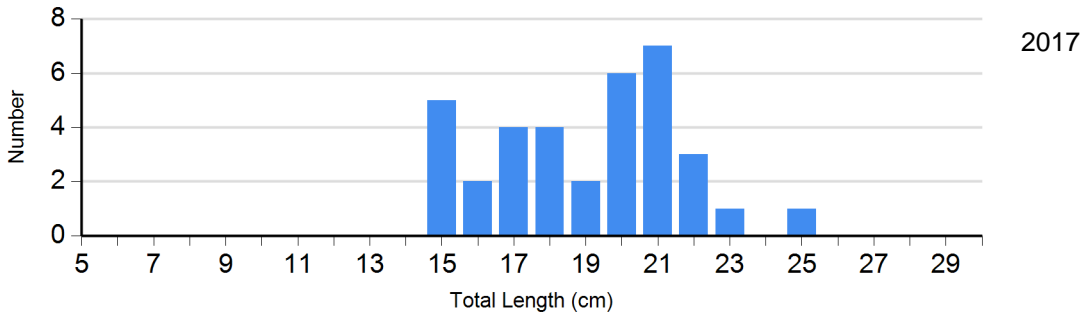


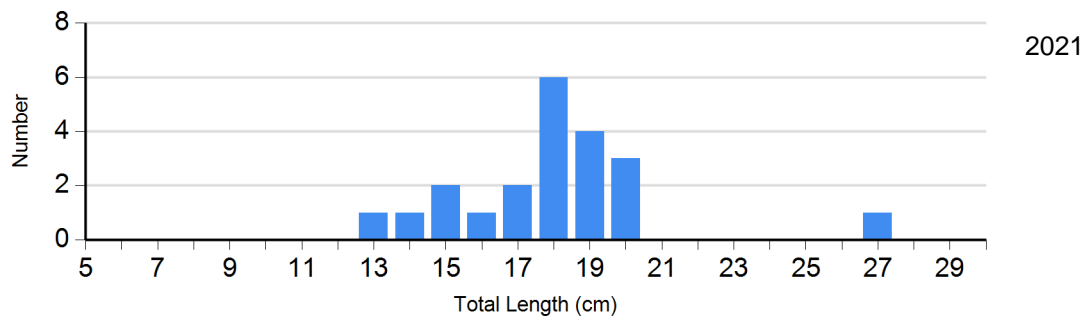


Species: White Bass  
Gear: std exp gill net

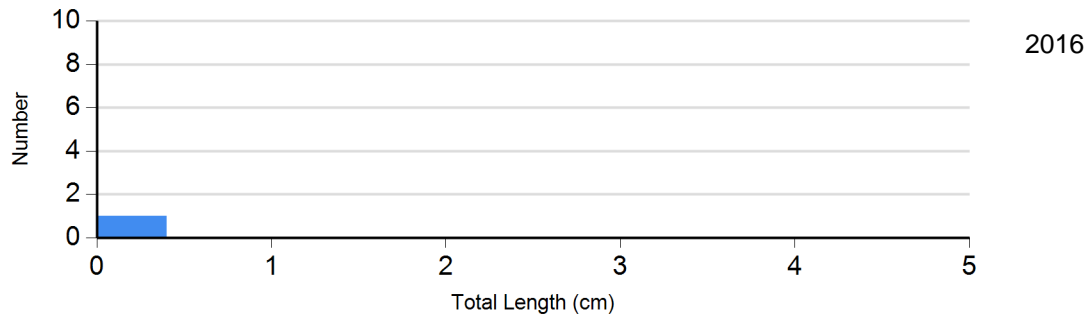


Species: Yellow Perch  
Gear: AFS std gill net





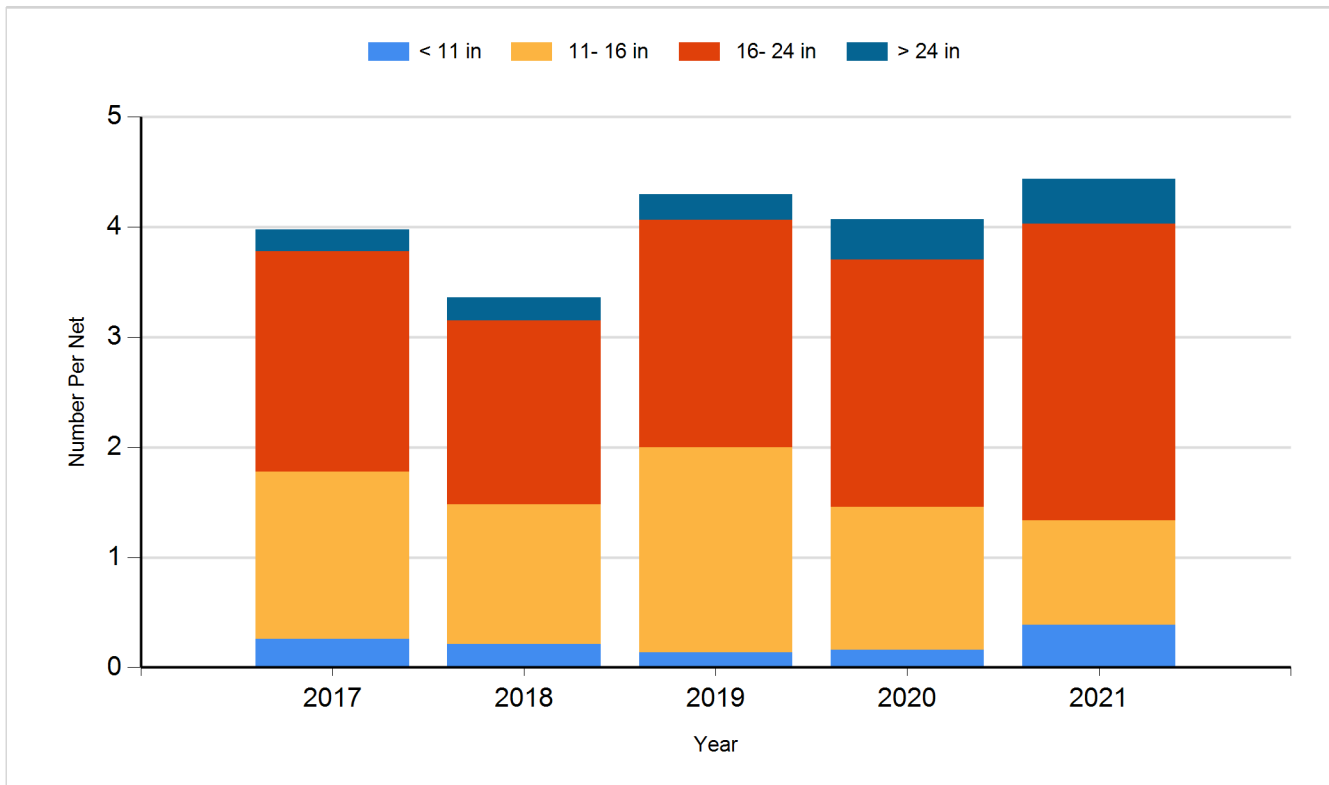
Species: Yellow Perch  
Gear: std exp gill net



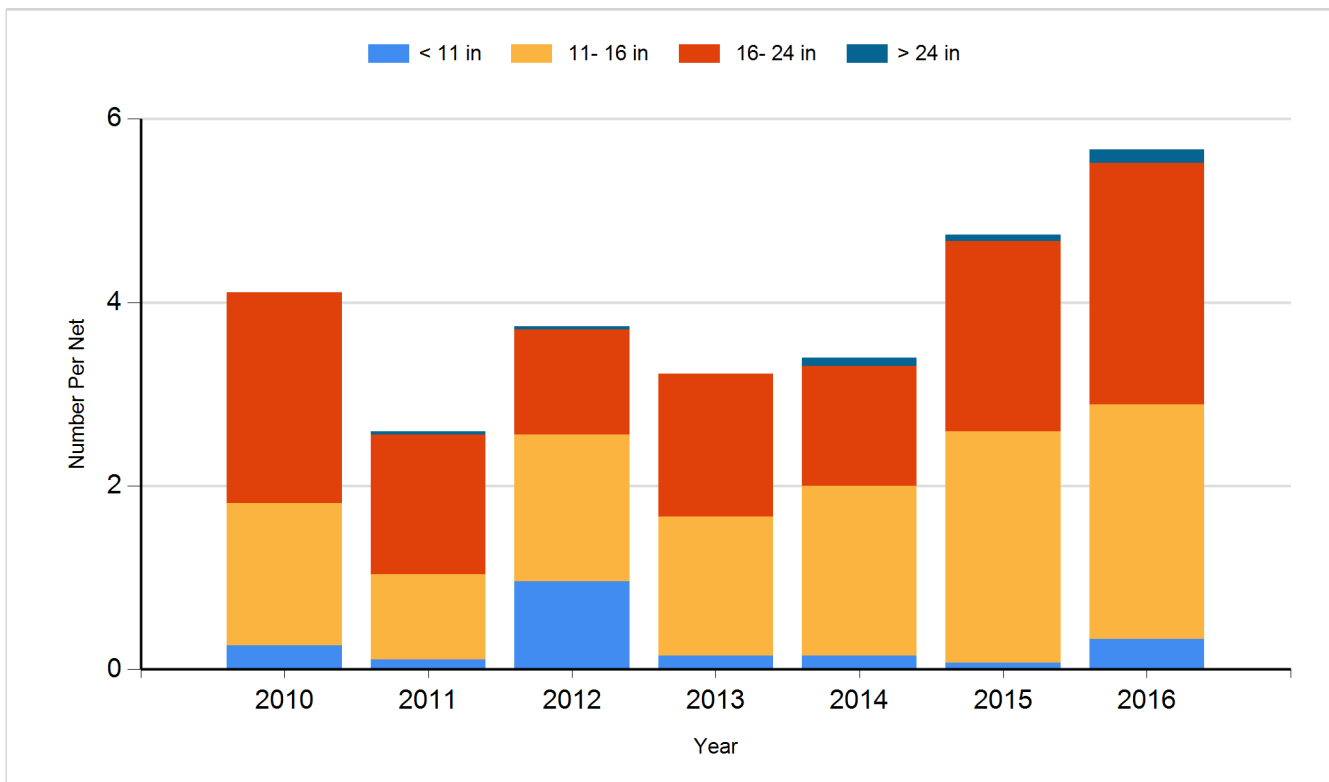
## Historic Fish Sizes and Relative Abundance

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

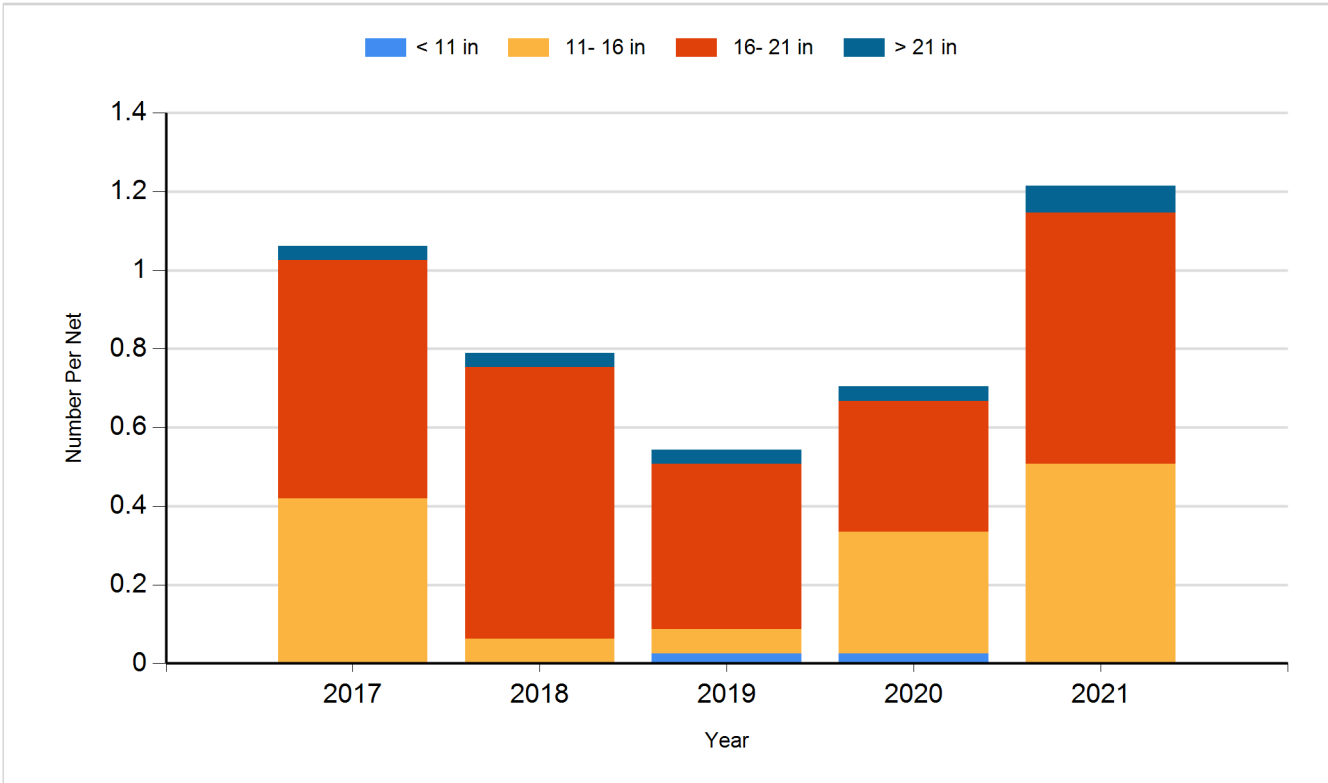
Species: Channel Catfish  
Gear: AFS std gill net



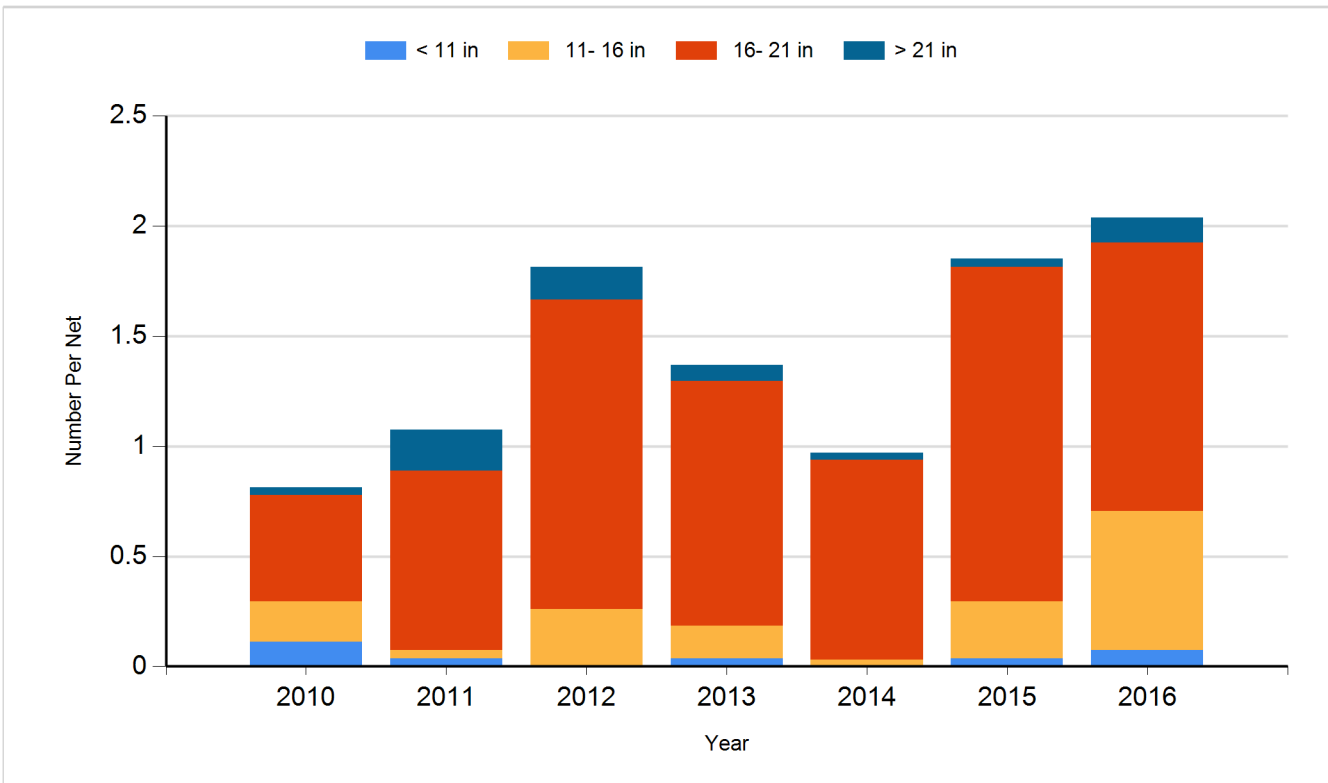
Species: Channel Catfish  
Gear: std exp gill net



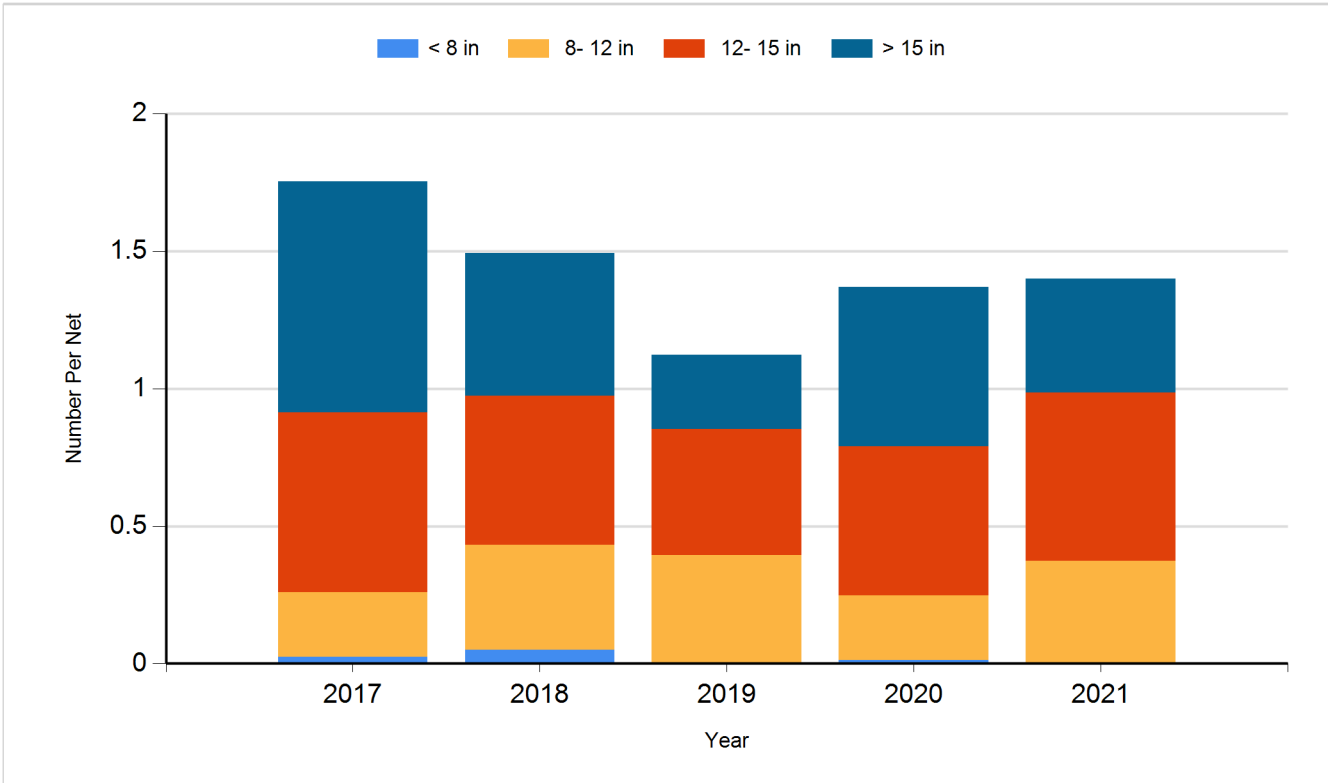
Species: Common Carp  
Gear: AFS std gill net



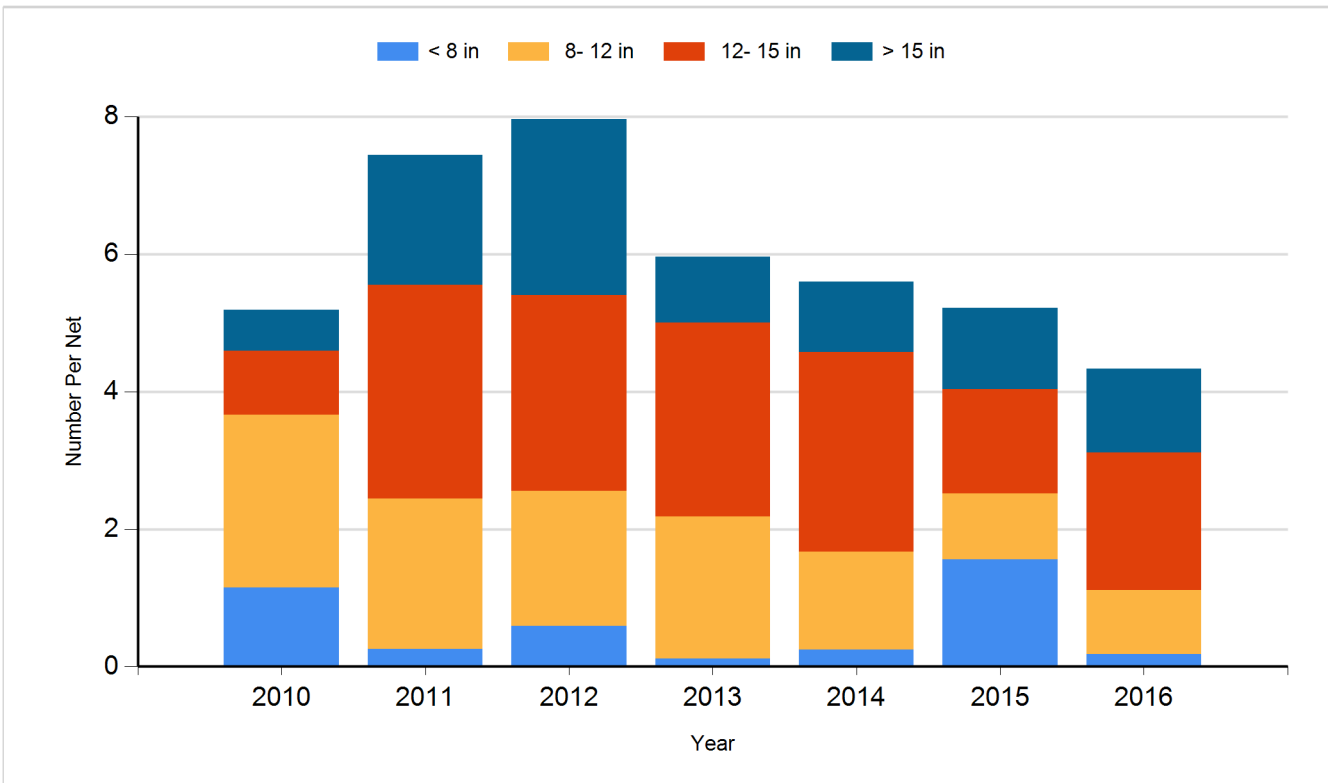
Species: Common Carp  
Gear: std exp gill net



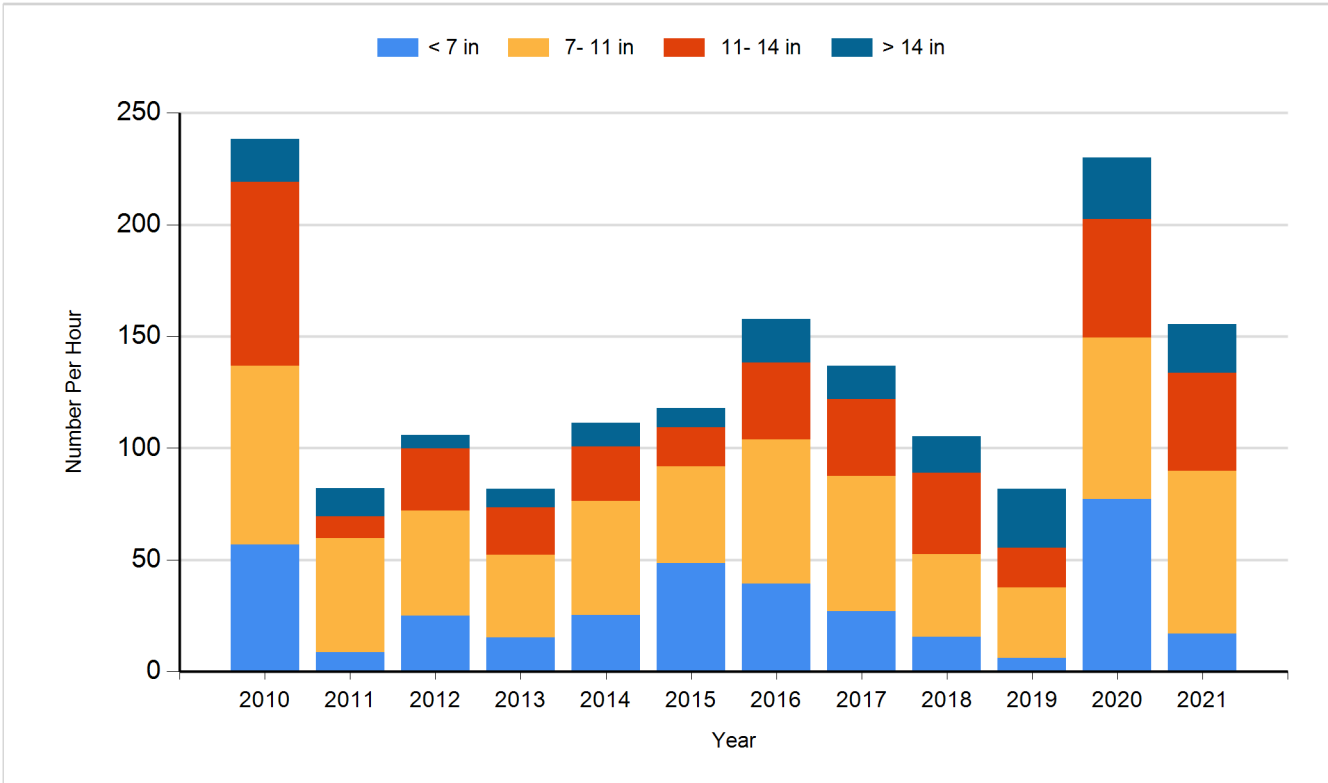
Species: Sauger  
Gear: AFS std gill net



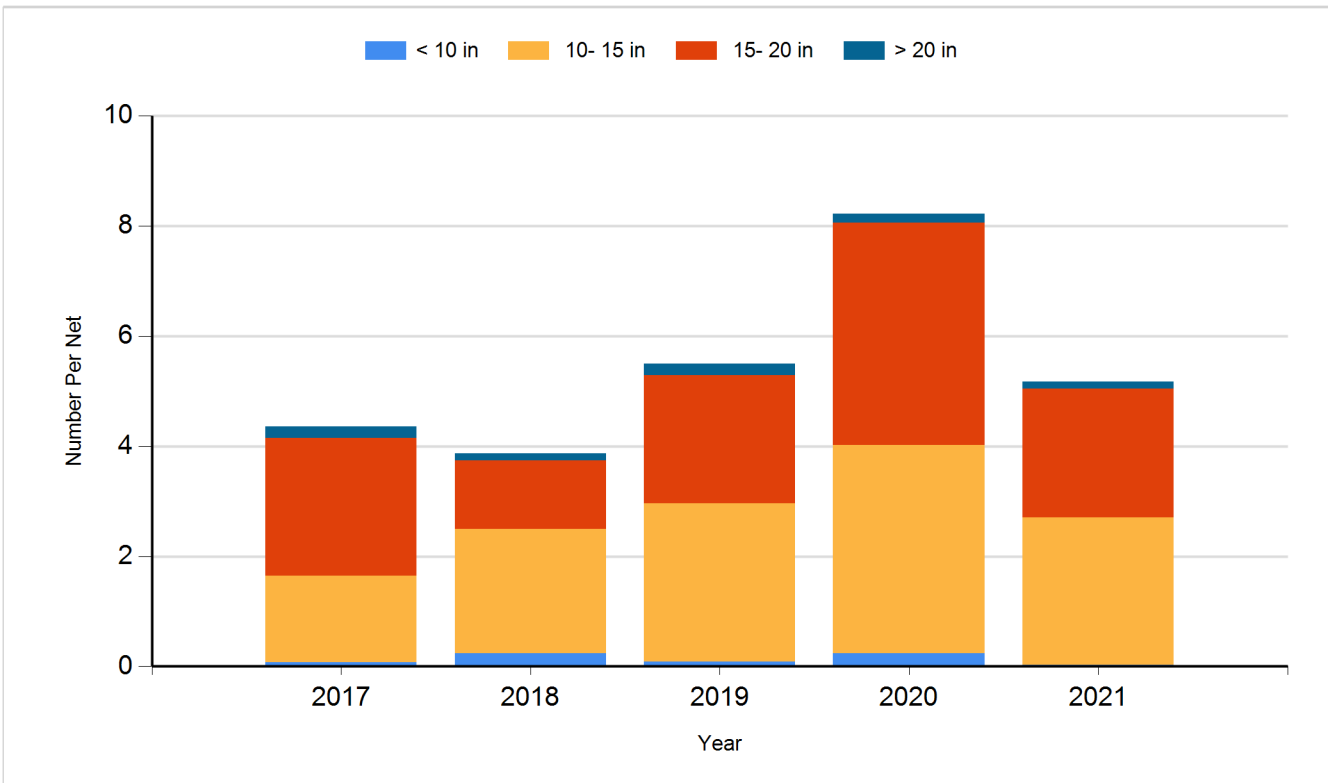
Species: Sauger  
Gear: std exp gill net



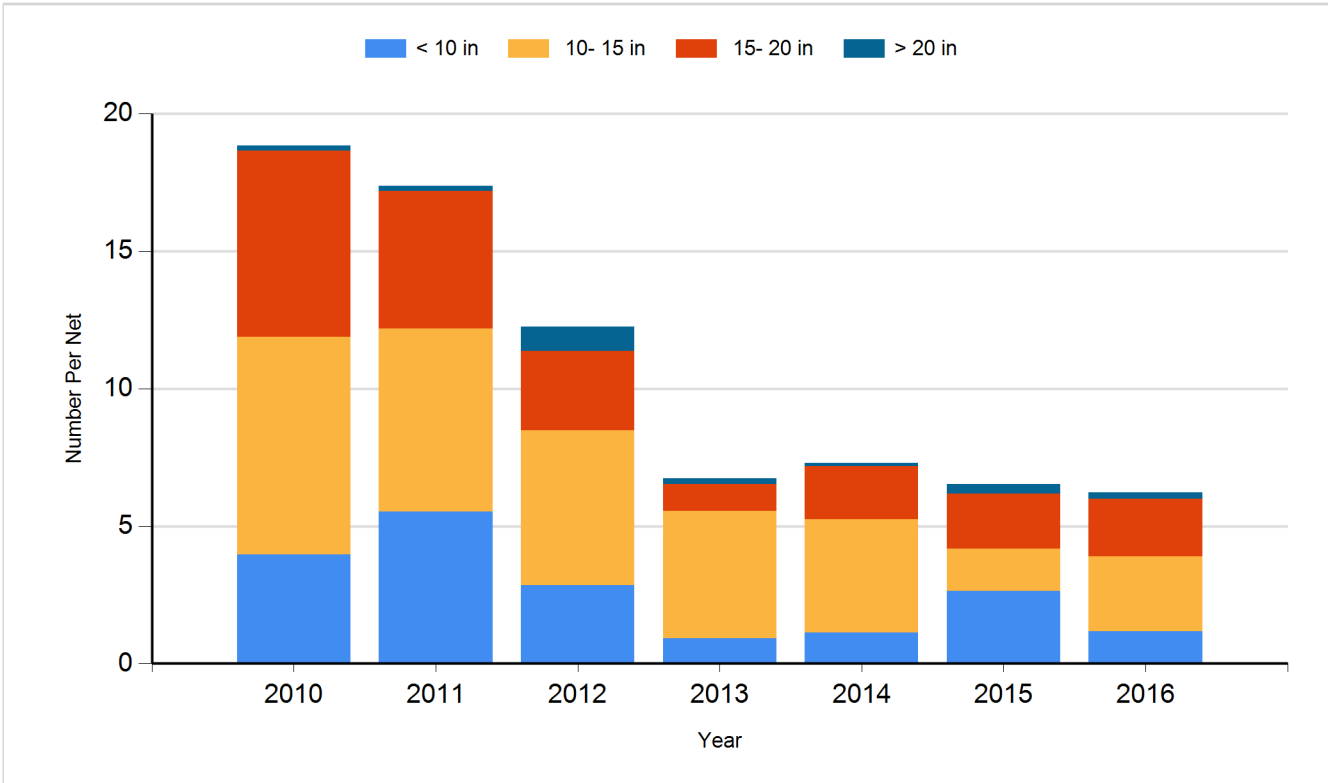
Species: Smallmouth Bass  
 Gear: boat shocker (night)



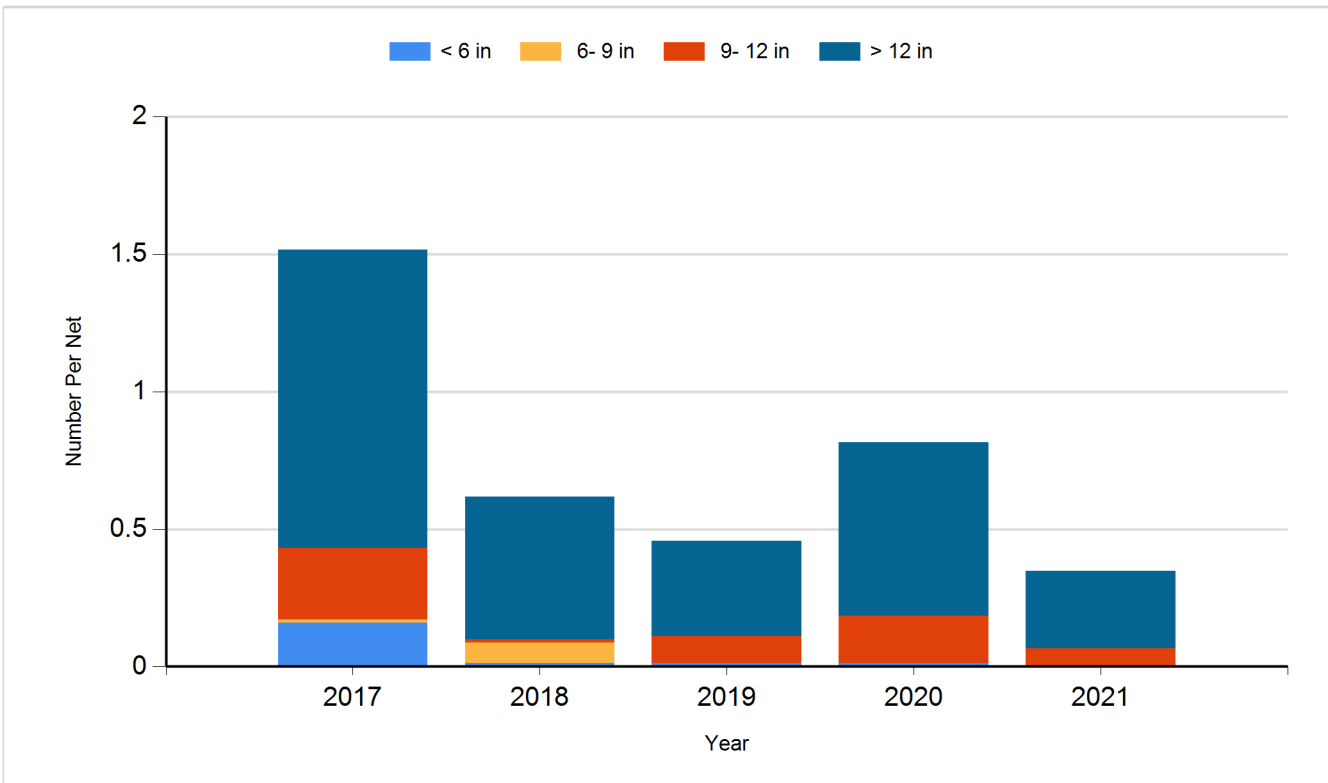
Species: Walleye  
 Gear: AFS std gill net



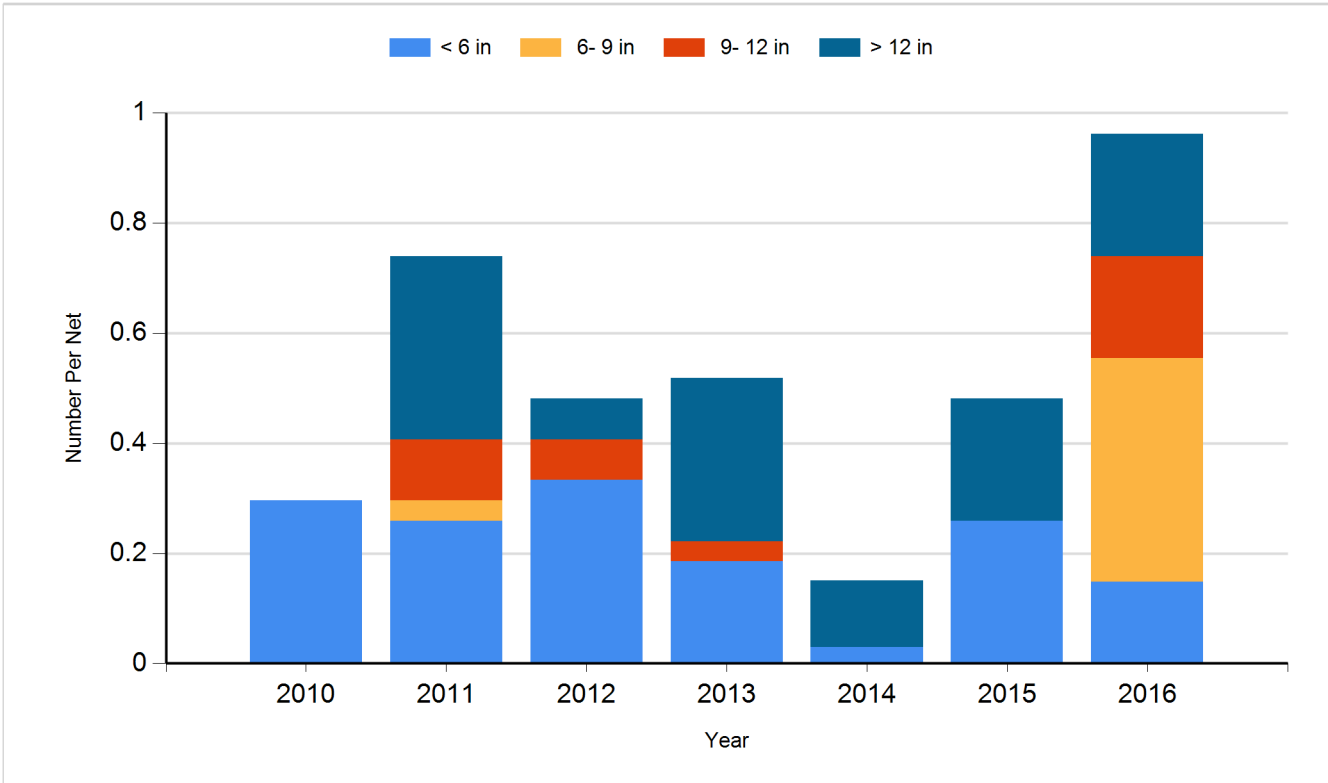
Species: Walleye  
Gear: std exp gill net



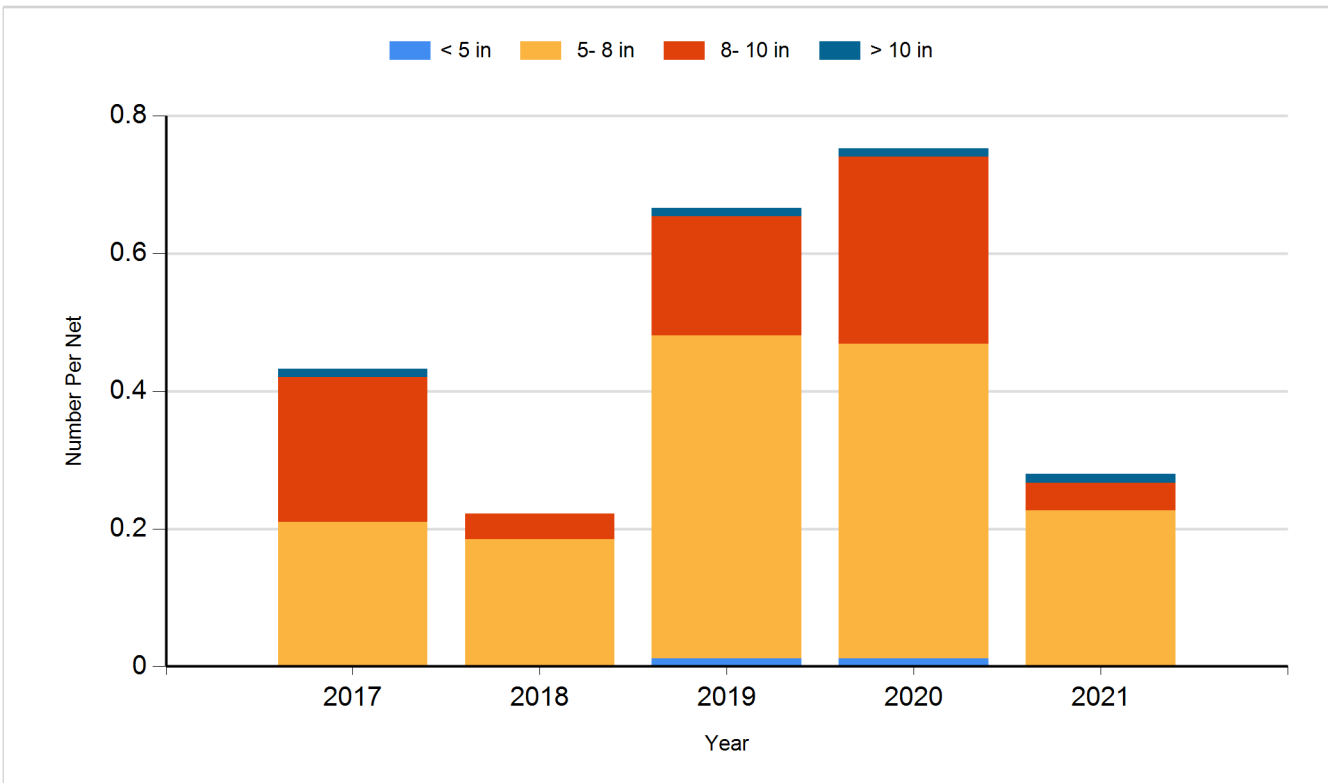
Species: White Bass  
Gear: AFS std gill net



Species: White Bass  
Gear: std exp gill net

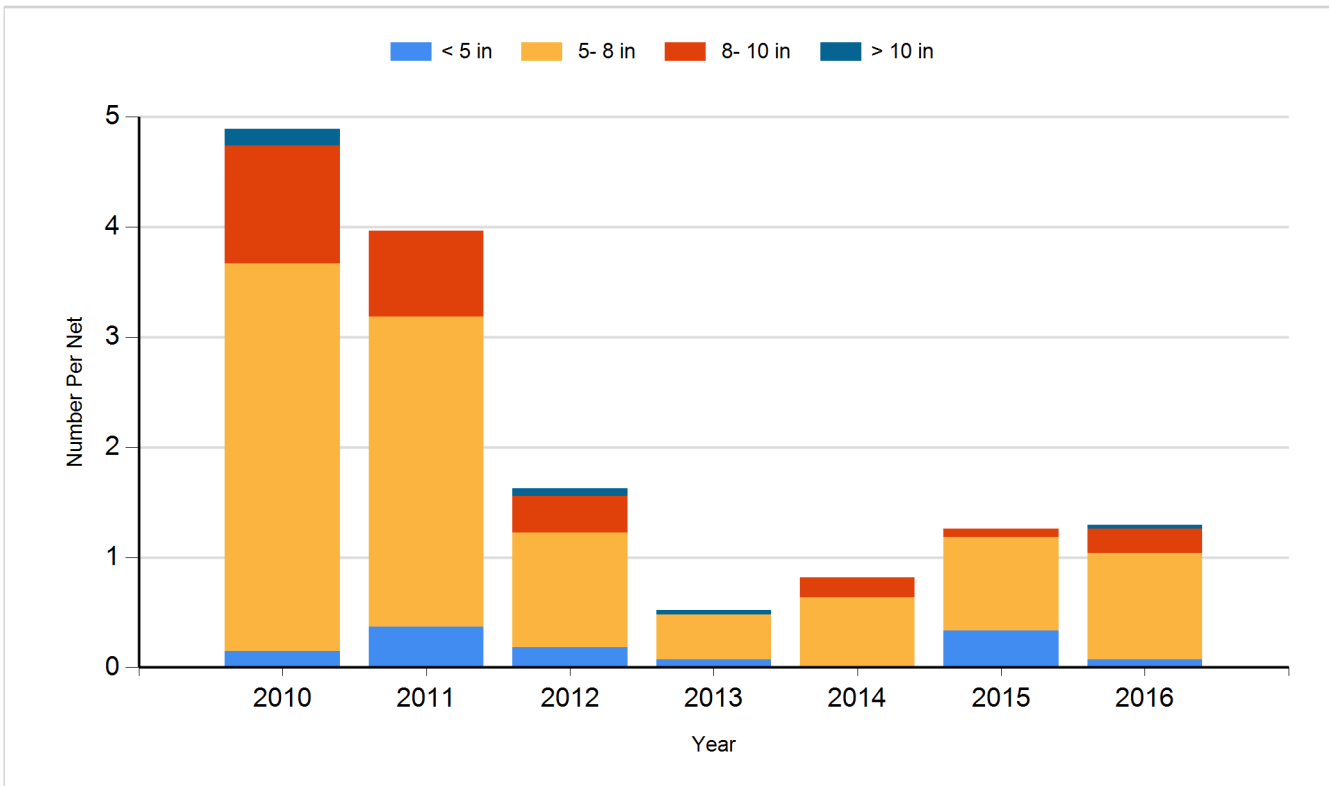


Species: Yellow Perch  
Gear: AFS std gill net





Species: Yellow Perch  
Gear: std exp gill net



## **Fish Stocking**

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

Year	Species	Size	Number
2011	Paddlefish	Large Fingerling	55,792
2012	Paddlefish	Large Fingerling	1,896
2013	Paddlefish	Large Fingerling	3,750
2014	Paddlefish	Juvenile	3,980
2015	Paddlefish	Large Fingerling	31,862
2016	Paddlefish	Large Fingerling	10,071
2017	Paddlefish	Large Fingerling	35,603
2018	Paddlefish	Large Fingerling	24,679
2019	Paddlefish	Large Fingerling	43,204
2020	Paddlefish	Large Fingerling	35,116
2021	Paddlefish	Juvenile	27,444