

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Campbell, Brookings County
MBS-Lake-234-000
2021

Lake Information

Name:	Campbell	Maximum Depth:	8 Feet
County:	Brookings	Mean Depth:	3 Feet
Legal Description:	T109n-R50W-Sec.28, 29, 32, 33; T108N-R50W-Sec. 5	OHWM Elevation:	1,576
Surface Area:	798 Acres	Outlet Elevation:	1,575

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jun 23, 2021	6 net-nights

Common Fish Species Present

Walleye

Yellow Perch

Channel Catfish

White Sucker

Black Bullhead

Common Carp

Saugeye

Northern Pike

White Bass

Black Crappie

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		0	0.0	0.0						
	Bigmouth Buffalo	2	0.3	0.3	50		0			
	Black Bullhead	19	3.2	1.8	100		5			
	Black Crappie	2	0.3	0.5	100		100		97	3
	Channel Catfish	156	26.0	4.9	74	5	4	2	92	1
	Common Carp	5	0.8	0.7	100		0			
	Northern Pike	4	0.7	0.3	75		25		72	4
	Saugeye	4	0.7	0.5	25		0		79	3
	Shorthead Redhorse	1	0.2	0.2	100		100			
	White Bass	3	0.5	0.3	100		33		94	3
	White Sucker	62	10.2	4.0	100		100			
	Yellow Perch	4	0.7	0.5	75		50		113	7

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							0.0	0.0	0.0		0.0	0.00
	Bigmouth Buffalo						1.5	1.3	1.2		0.3	1.08
	Black Bullhead						10.8	17.8	3.2		3.2	8.75
	Black Crappie						0.0	0.2	0.3		0.3	0.20
	Channel Catfish						2.3	6.0	4.0		26.0	9.58
	Common Carp						4.3	1.2	1.5		0.8	1.95
	Northern Pike						0.8	0.3	1.0		0.7	0.70
	Saugeye						1.3	3.7	2.3		0.7	2.00
	Shorthead Redhorse						0.2	0.2	1.7		0.2	0.58
	Walleye						10.8	3.0	0.2		0.0	3.50
	White Bass						1.5	1.7	1.2		0.5	1.23
White Sucker						9.5	8.2	13.5		10.2	10.35	
Yellow Perch						3.3	1.5	3.2		0.7	2.18	
frame net (std 3/4 in)	Bigmouth Buffalo		1.2									1.20
	Black Bullhead		32.3									32.30
	Black Crappie		0.0									0.00
	Channel Catfish		6.1									6.10
	Common Carp		8.2									8.20
	Northern Pike		0.2									0.20
	Shorthead Redhorse		0.1									0.10
	Walleye		0.0									0.00
	White Bass		0.0									0.00
	White Sucker		0.8									0.80
	Yellow Bullhead		0.0									0.00
Yellow Perch		0.0									0.00	
std exp gill net	Bigmouth Buffalo		0.0	0.7	2.0	0.0						0.68
	Black Bullhead		21.3	27.7	39.7	61.0						37.43
	Channel Catfish		7.3	3.7	3.0	5.3						4.83
	Common Carp		1.3	0.0	4.0	1.3						1.65
	Common Shiner		0.0	0.0	0.0	0.0						0.00
	Northern Pike		1.0	8.7	2.7	1.3						3.43
	Orangespotted Sunfish		0.0	0.0	0.0	0.0						0.00
	Shorthead Redhorse		1.0	0.0	0.0	0.3						0.33
	Walleye		0.3	3.0	0.3	22.7						6.58

CPUE

Gear	Species	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Avg
std exp gill net	White Bass		0.0	0.0	2.7	2.0						1.18
	White Sucker		2.3	3.3	7.7	9.3						5.65
	Yellow Bullhead		0.0	0.0	0.0	0.0						0.00
	Yellow Perch		0.0	2.3	26.3	6.0						8.65

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	Black Bullhead	PSD						29	95	89		100
		PSD-P						3	3	5		5
	Black Crappie	PSD							100	100		100
		PSD-P							100	0		100
		Wr							64	116		97
	Channel Catfish	PSD						50	100	92		74
		PSD-P						14	17	8		4
		Wr						98	93	105		92
	Common Carp	PSD						85	100	89		100
		PSD-P						58	57	56		0
	Northern Pike	PSD						80	50	83		75
		PSD-P						40	50	0		25
		Wr						85	121	85		72
	Saugeye	PSD						0	9	50		25
		PSD-P						0	0	0		0
		Wr						88	88	90		79
	Walleye	PSD						20	33	100		
		PSD-P						0	0	100		
		Wr						82	83	91		
	White Bass	PSD						100	90	57		100
		PSD-P						100	80	57		33
		Wr						92	89	95		94
	White Sucker	PSD						100	100	100		100
		PSD-P						98	100	99		100
	Yellow Perch	PSD						95	78	79		75
		PSD-P						80	44	26		50
		Wr						91	100	113		113
frame net (std 3/4 in)	Black Bullhead	PSD		89								
		PSD-P		0								
		Wr		83								
	Channel Catfish	PSD		92								
		PSD-P		3								
		Wr		86								

Gear	Species	Index	Year									
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
frame net (std 3/4 in)	Common Carp	PSD		99								
		PSD-P		52								
		Wr		92								
	Northern Pike	PSD		100								
		PSD-P		0								
		Wr		72								
	White Sucker	PSD		100								
		PSD-P		100								
		Wr		86								
std exp gill net	Black Bullhead	PSD		72	45	45	60					
		PSD-P		0	0	2	3					
		Wr		87								
	Channel Catfish	PSD		100	100	100	19					
		PSD-P		0	27	11	6					
		Wr		94	107	109	99					
	Common Carp	PSD		100	0	8	100					
		PSD-P		50	0	8	25					
		Wr		91								
	Northern Pike	PSD		100	35	75	100					
		PSD-P		0	8	0	25					
		Wr		79	98	97	88					
	Walleye	PSD		0	100	0	0					
		PSD-P		0	11	0	0					
		Wr		100	105	113	90					
	White Bass	PSD				13	100					
		PSD-P				13	100					
		Wr				100	102					
	White Sucker	PSD		100	70	22	96					
		PSD-P		100	70	9	46					
		Wr		100								
	Yellow Perch	PSD			0	100	100					
		PSD-P			0	43	83					
		Wr			112	103	91					

Length at Capture

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

Species: Saugeye

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2019	16	224 (3)	353 (10)	433 (3)							
2018	22	263 (4)	336 (18)								

Species: Walleye

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2019	1				550 (1)						
2018	18	282 (5)	327 (6)	405 (7)							
2017	66	270 (28)	376 (37)					505 (1)			

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	19	143 (4)	218 (9)	256 (6)							
2018	9	166 (2)	235 (2)	243 (1)	273 (1)	295 (3)					

Fish Condition

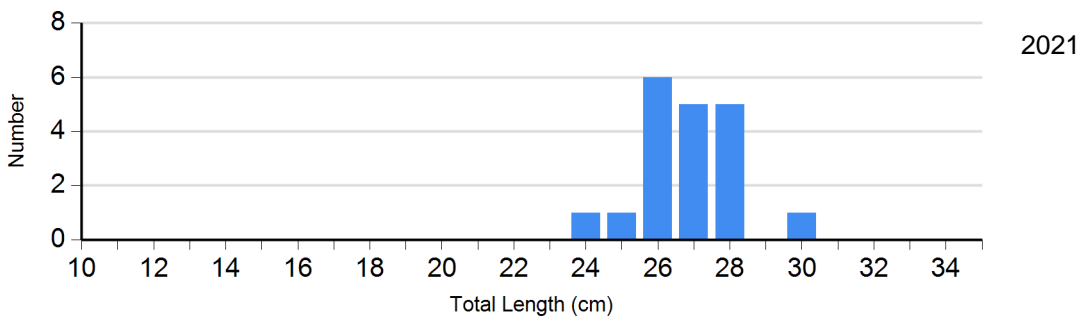
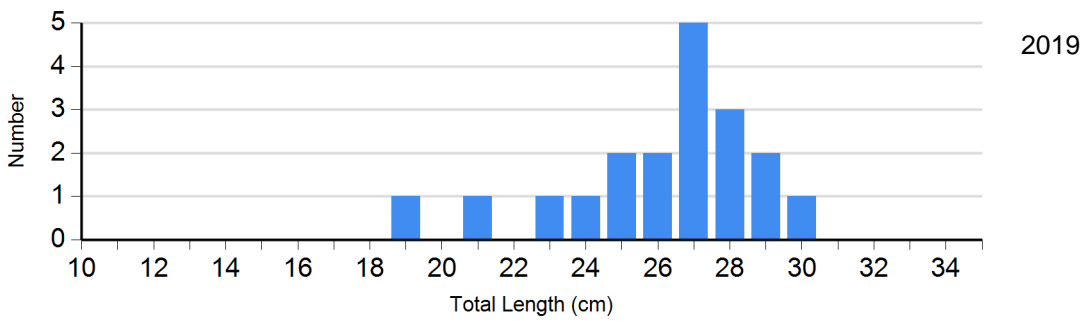
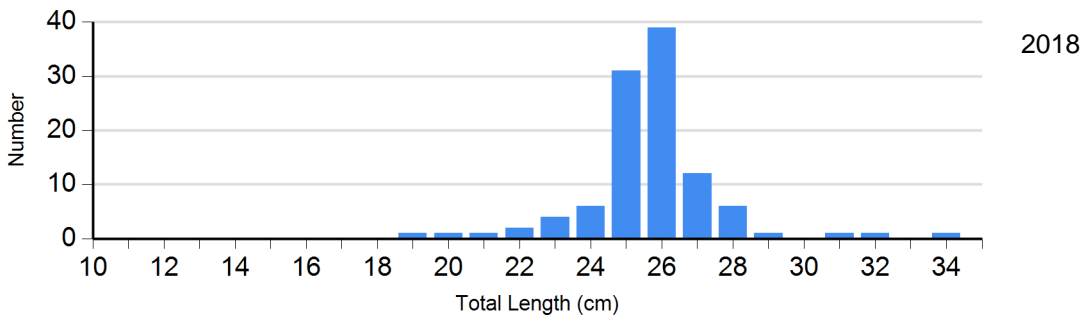
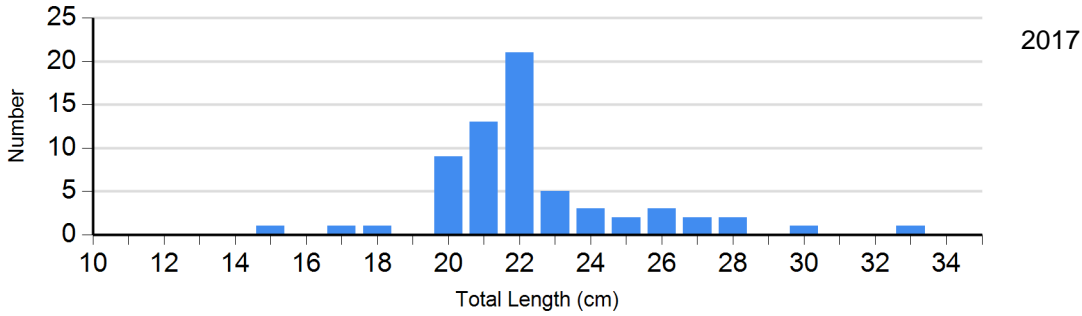
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

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	7	98 (2.3)	5	95 (3.2)	1	108	1	109
	2018	0		30	91 (1.9)	4	100 (4.2)	2	111 (10.7)
	2019	2	99 (9.9)	20	105 (1.5)	2	113 (2.5)	0	
	2021	41	93 (1.2)	109	90 (0.9)	6	99 (0.9)	0	
Northern Pike Gill Net	2017	1	96	2	74 (4.2)	2	90 (0.8)	0	
	2018	1	150	0		1	92	0	
	2019	1	82	5	86 (2.8)	0		0	
	2021	1		2	69 (0.3)	1	79	0	
Saugeye Gill Net	2017	8	88 (1.9)	0		0		0	
	2018	20	88 (1.2)	2	90 (2.0)	0		0	
	2019	7	91 (2.3)	7	89 (4.6)	0		0	
	2021	3	78 (2.9)	1	79	0		0	
Walleye Gill Net	2017	52	82 (0.8)	13	84 (1.6)	0		0	
	2018	12	85 (1.6)	6	81 (1.3)	0		0	
	2019	0		0		1	91	0	
White Bass Gill Net	2017	0		0		9	92 (2.2)	0	
	2018	1	95	1	85	6	90 (2.1)	2	85 (0.0)
	2019	3	95 (3.1)	0		2	97 (0.8)	2	95 (0.1)
	2021	0		2	96 (0.0)	1	89	0	
Yellow Perch Gill Net	2017	1	81	3	104 (2.5)	9	90 (2.2)	7	88 (4.8)
	2018	2	105 (4.7)	3	101 (4.0)	2	103 (0.9)	2	91 (8.1)
	2019	4	127 (4.2)	10	113 (2.5)	5	103 (2.4)	0	
	2021	1	121	1	113	2	110 (10.8)	0	

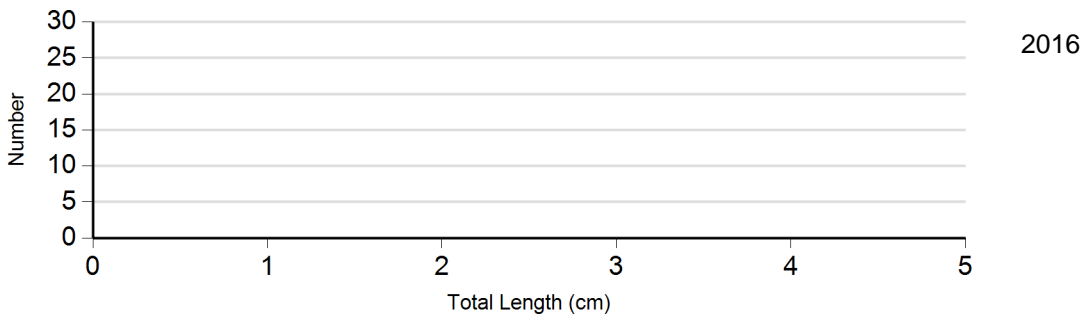
Length Frequency Distribution

Length frequency histogram of species sampled by year.

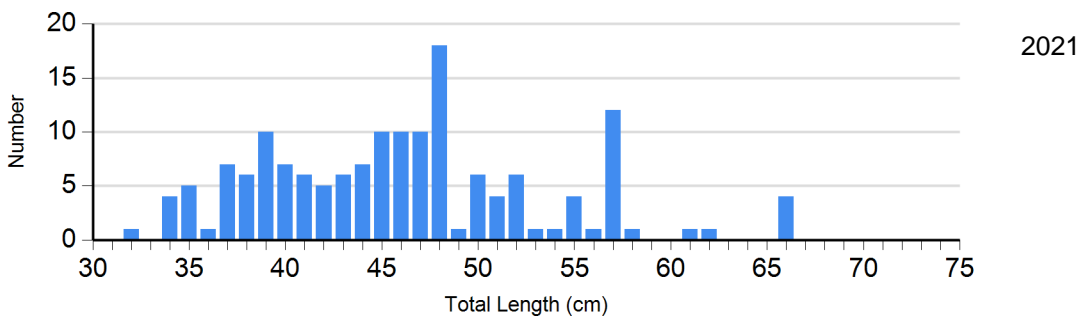
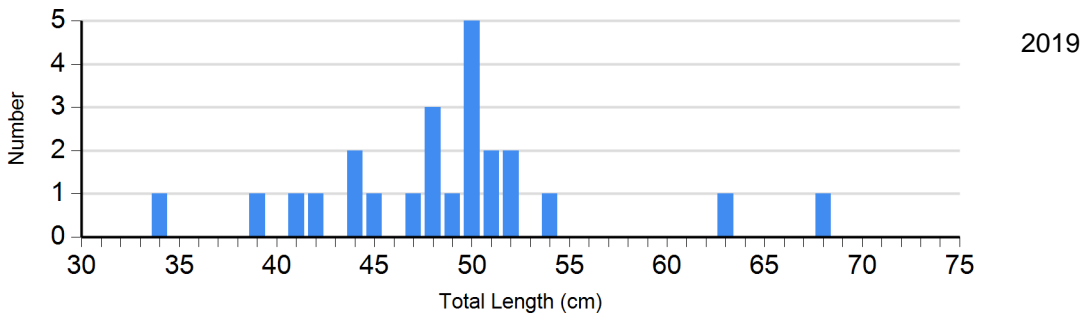
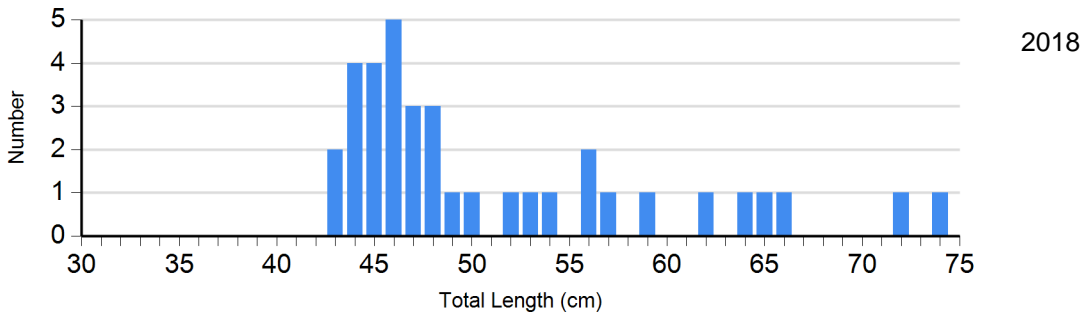
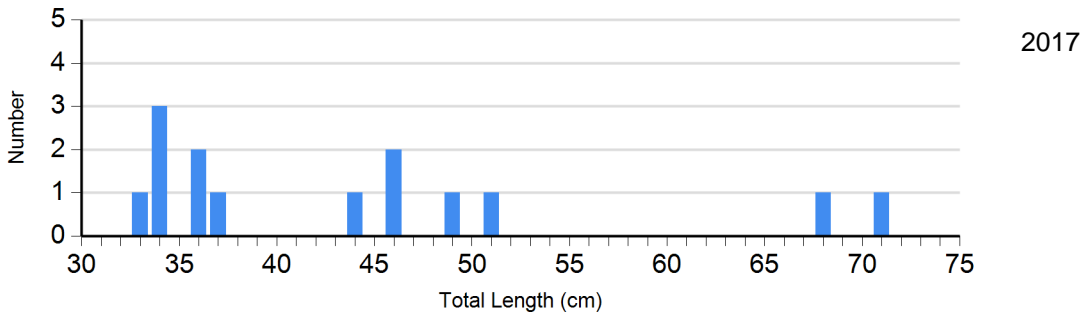
Species: Black Bullhead
Gear: AFS std gill net



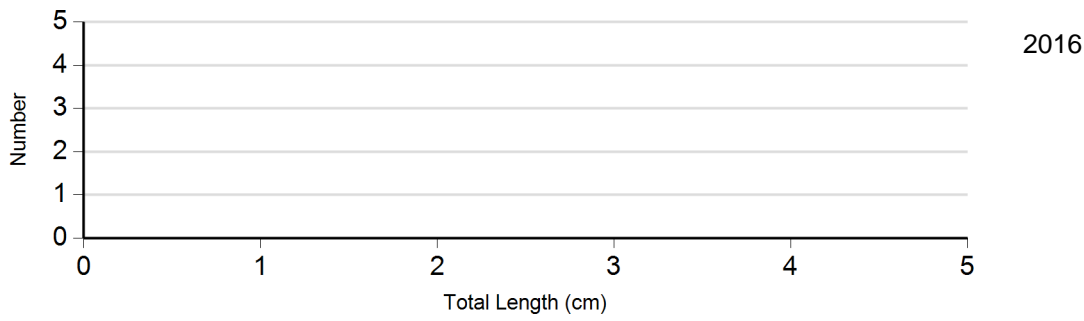
Species: Black Bullhead
Gear: std exp gill net



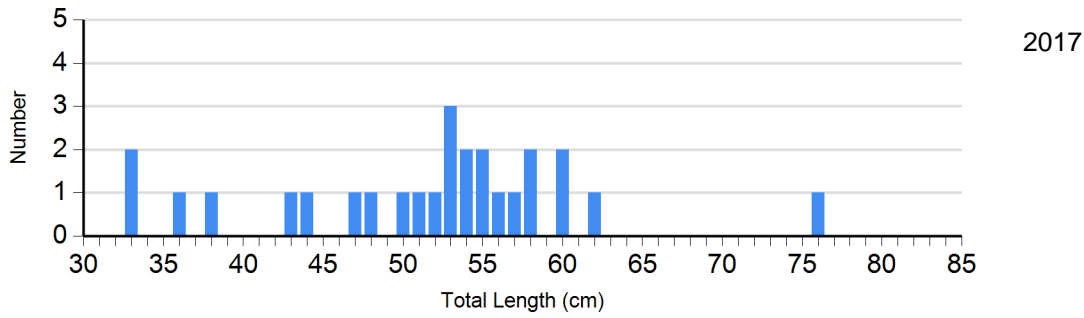
Species: Channel Catfish
Gear: AFS std gill net



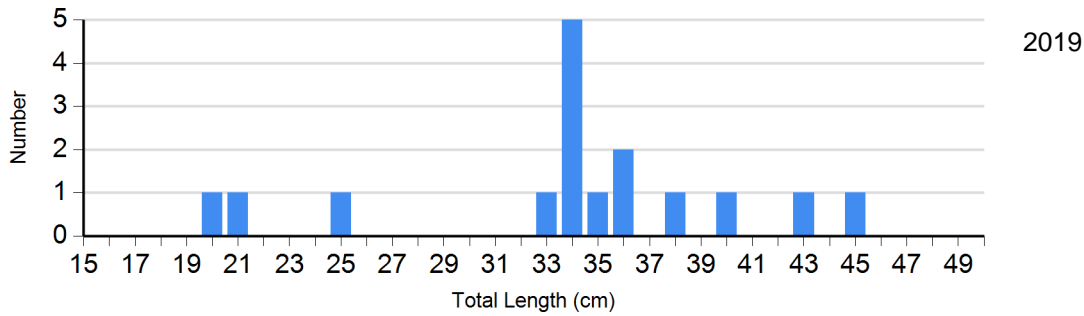
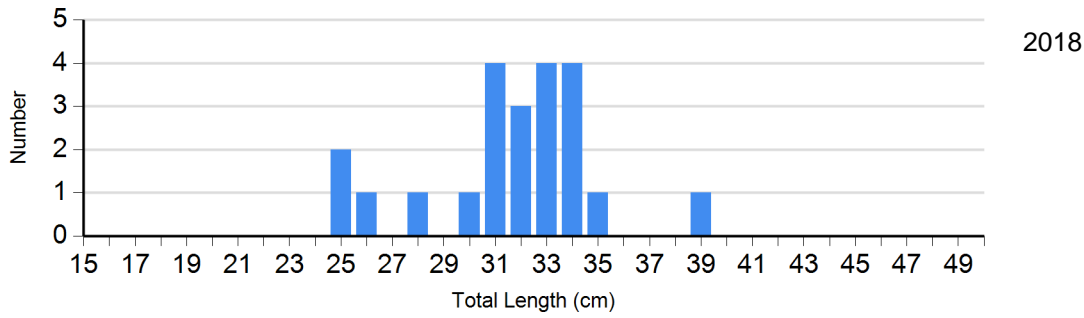
Species: Channel Catfish
 Gear: std exp gill net



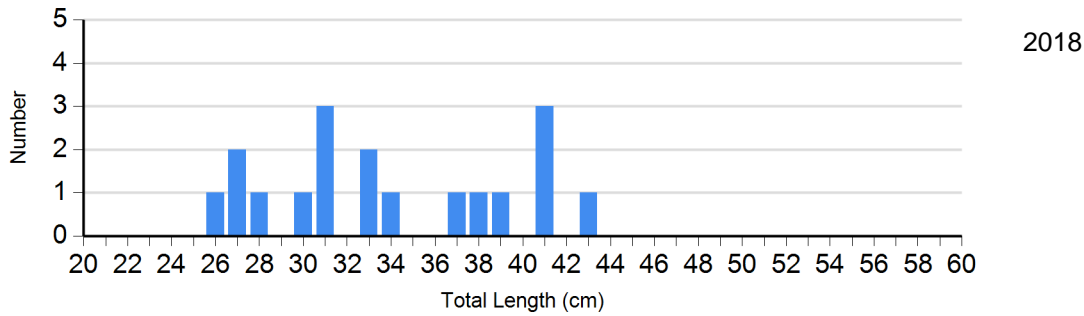
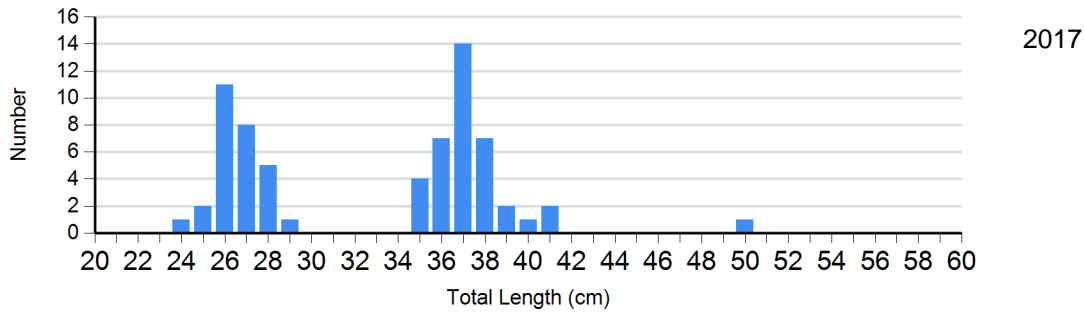
Species: Common Carp
 Gear: AFS std gill net



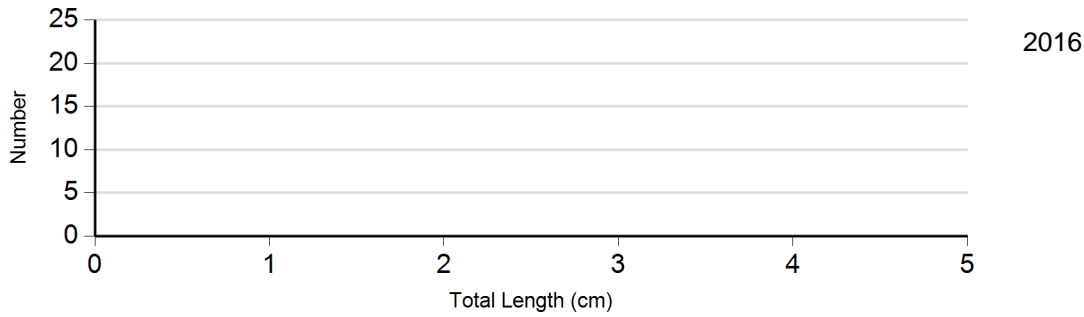
Species: Saugeye
 Gear: AFS std gill net



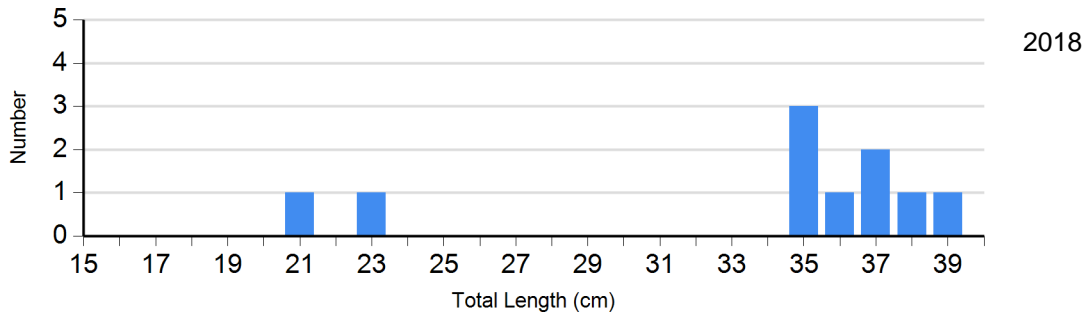
Species: Walleye
Gear: AFS std gill net



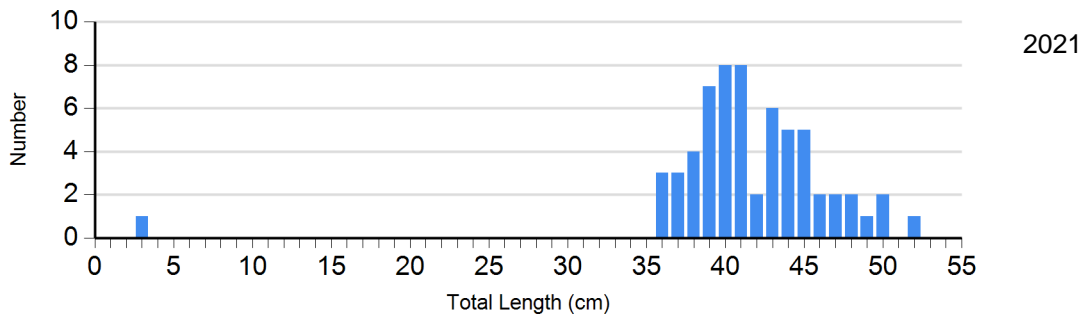
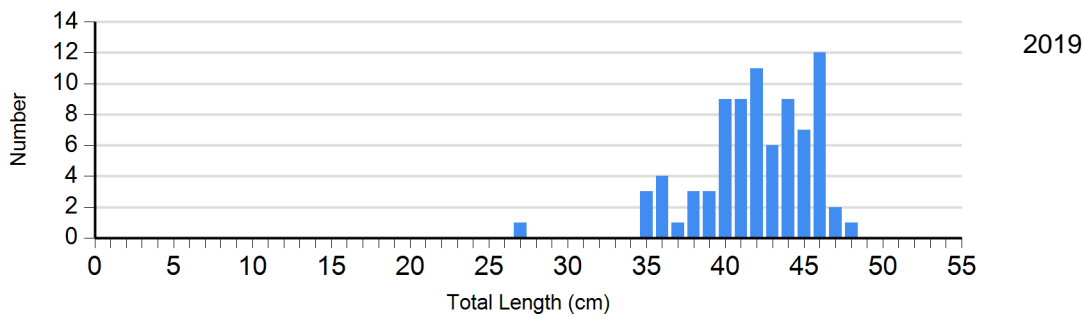
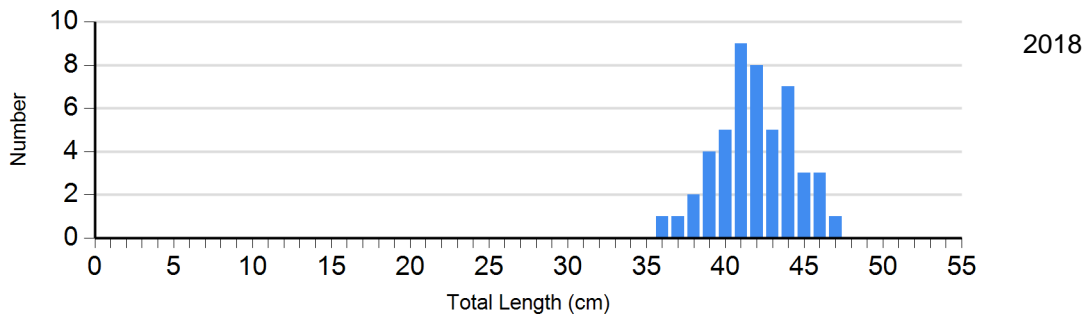
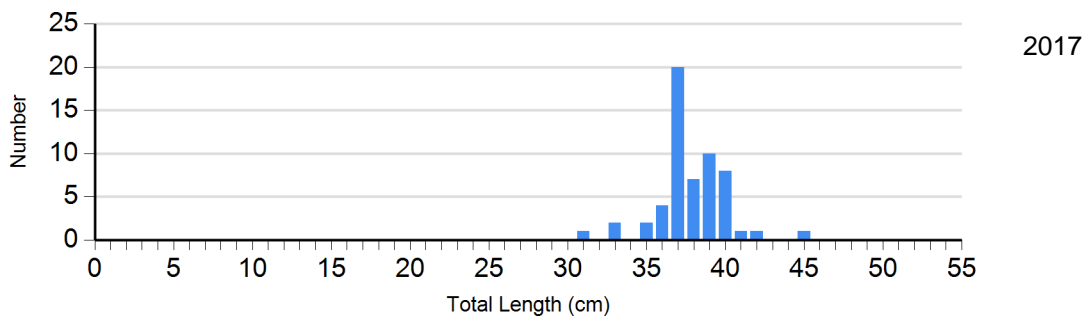
Species: Walleye
Gear: std exp gill net



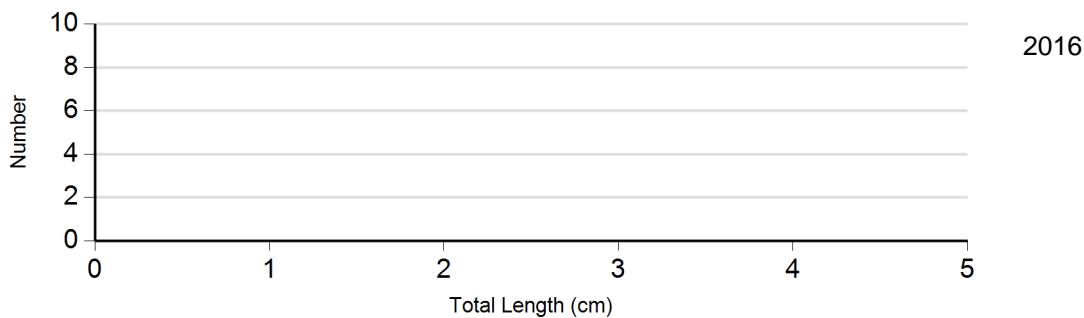
Species: White Bass
Gear: AFS std gill net



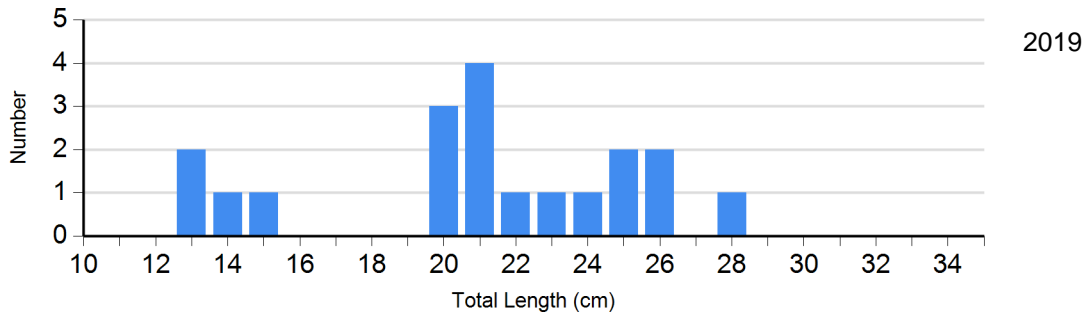
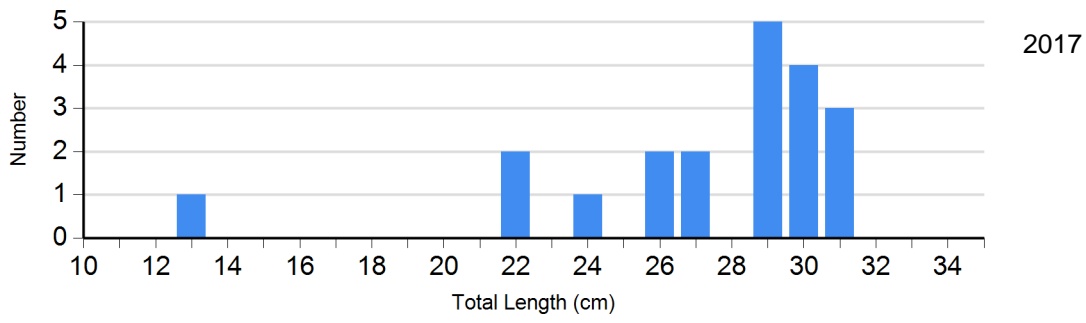
Species: White Sucker
Gear: AFS std gill net



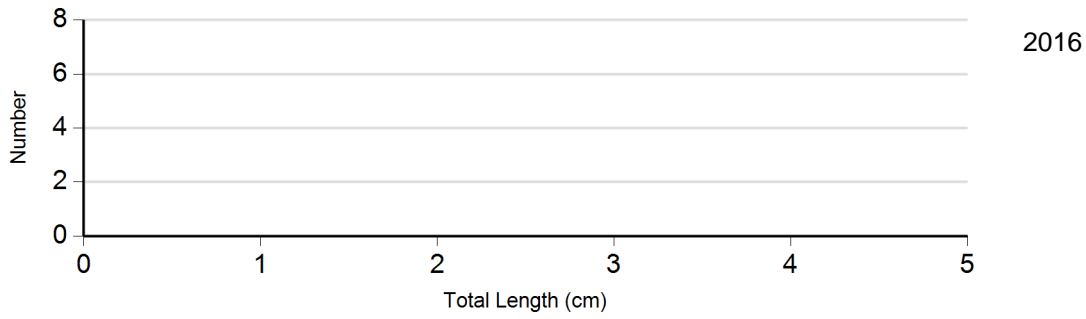
Species: White Sucker
Gear: std exp gill net



Species: Yellow Perch
Gear: AFS std gill net



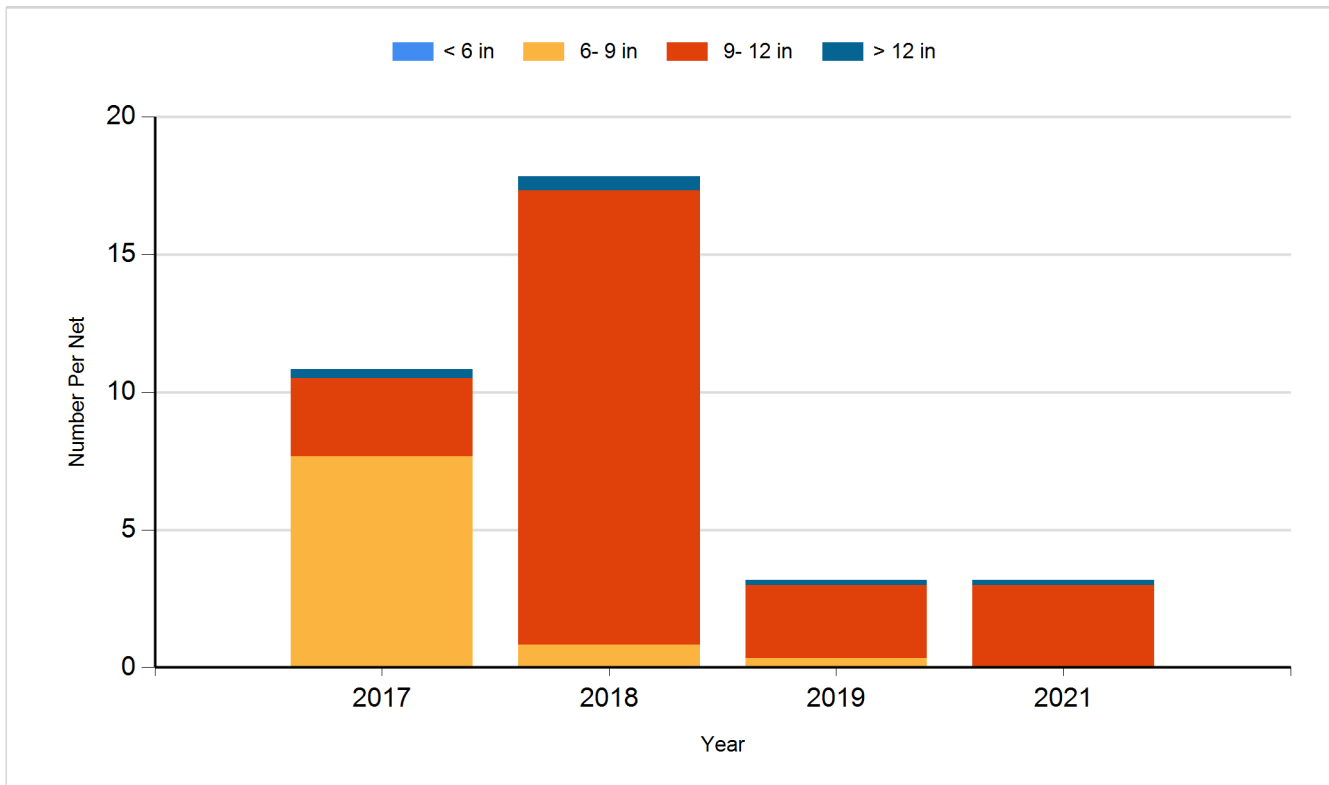
Species: Yellow Perch
Gear: std exp gill net



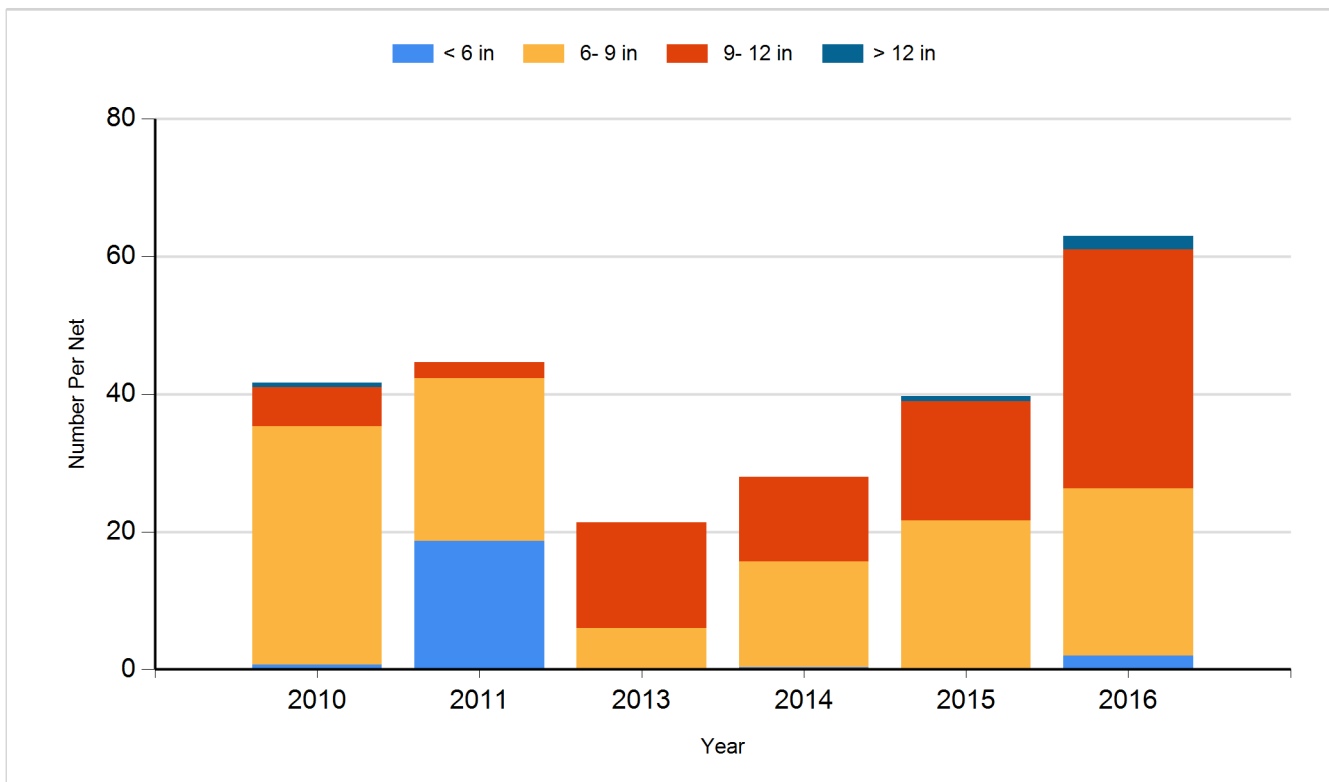
Historic Fish Sizes and Relative Abundance

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

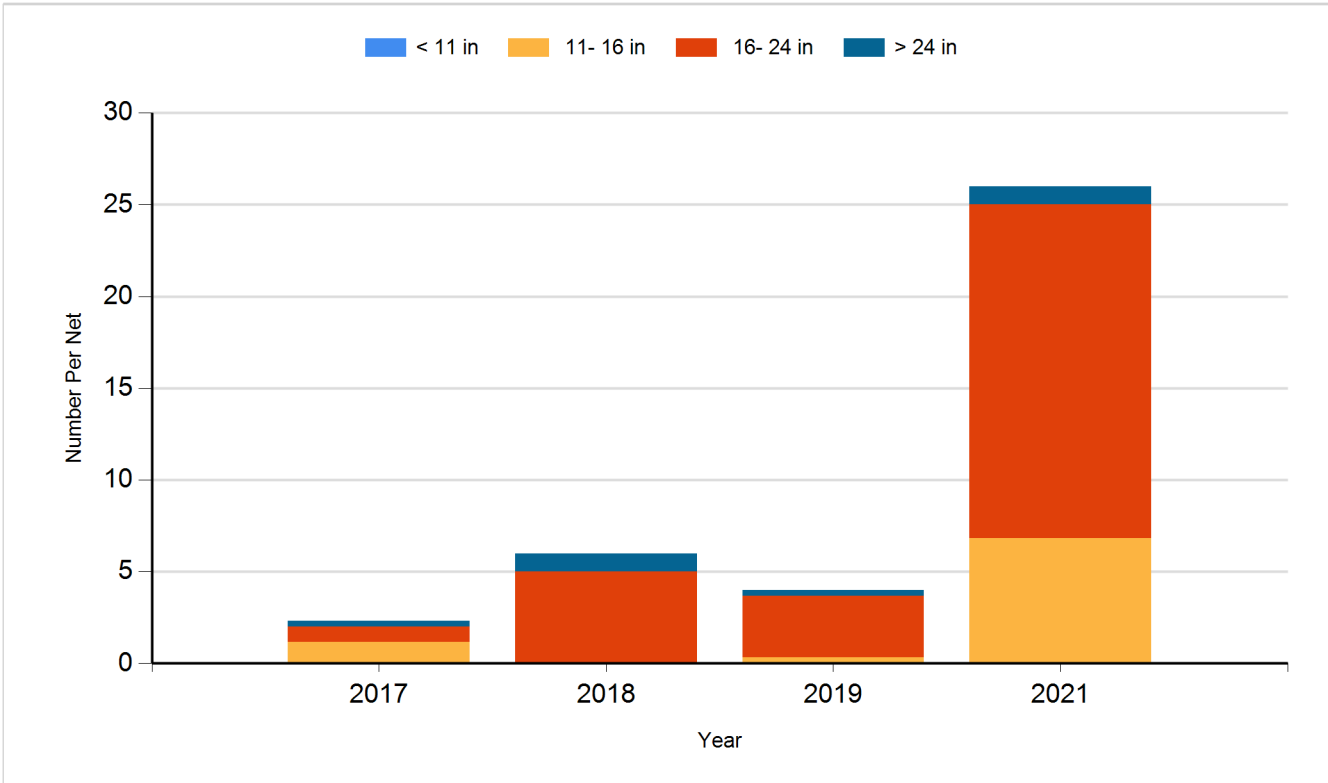
Species: Black Bullhead
Gear: AFS std gill net



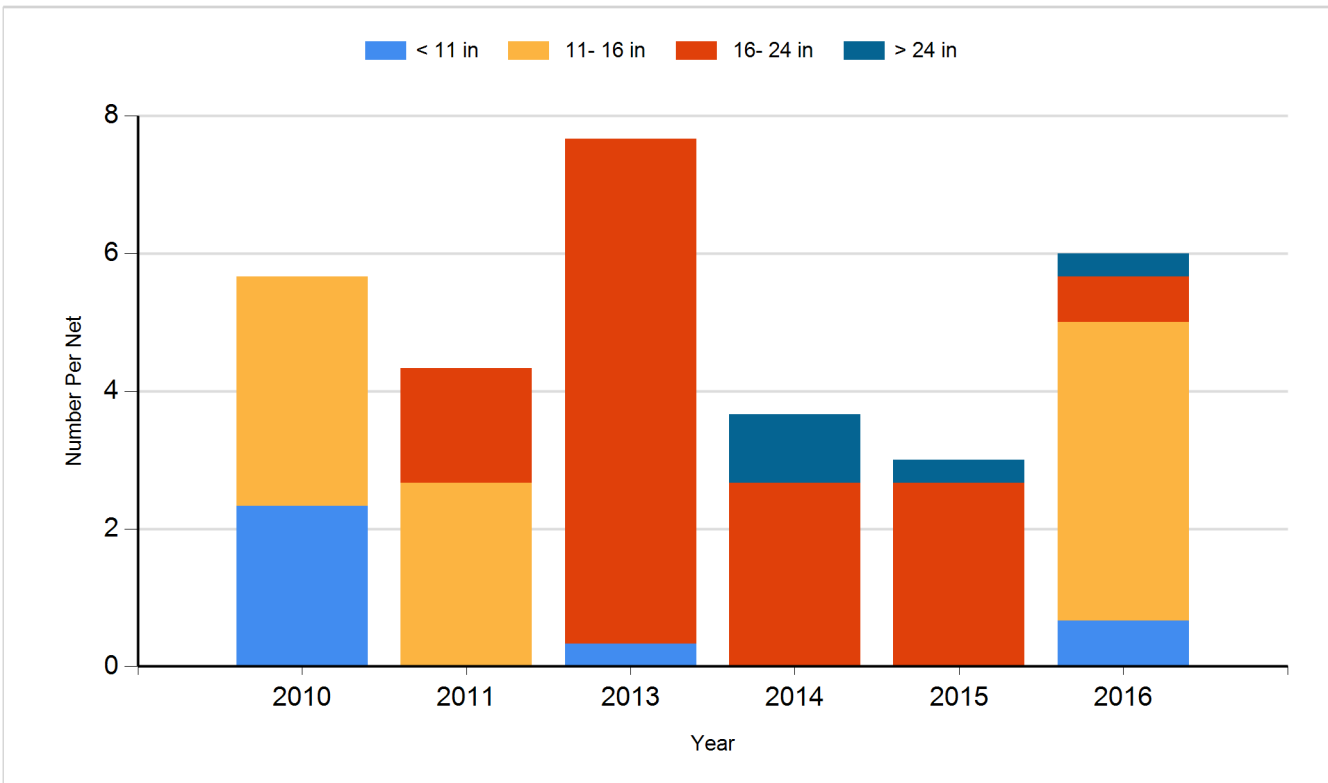
Species: Black Bullhead
Gear: std exp gill net



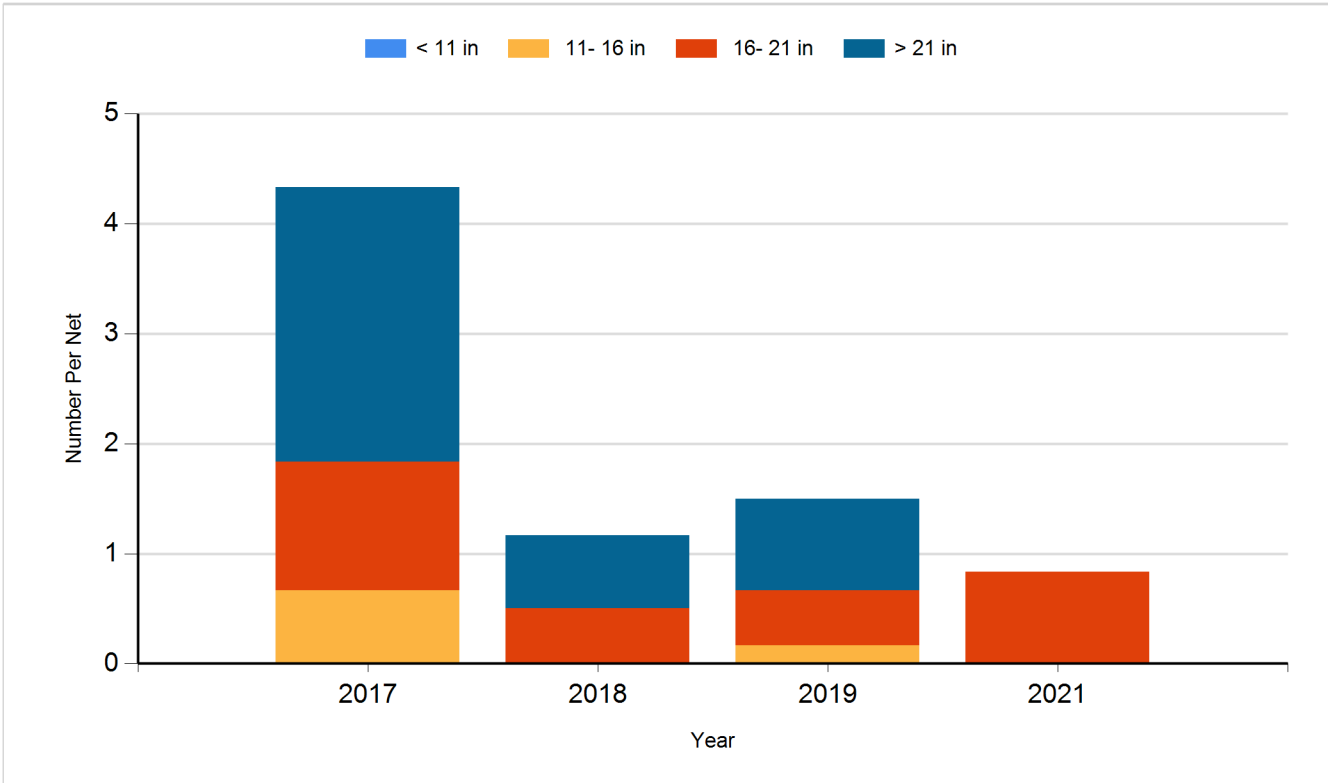
Species: Channel Catfish
Gear: AFS std gill net



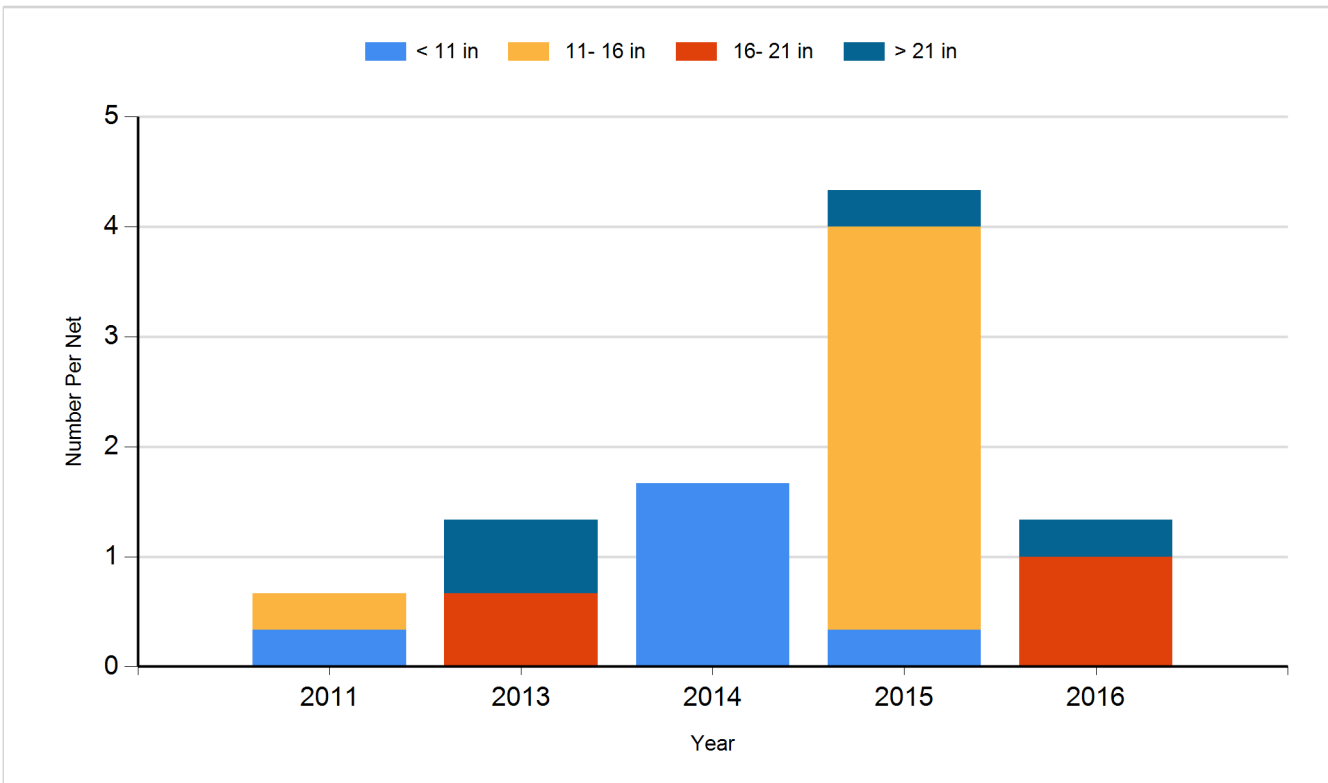
Species: Channel Catfish
Gear: std exp gill net



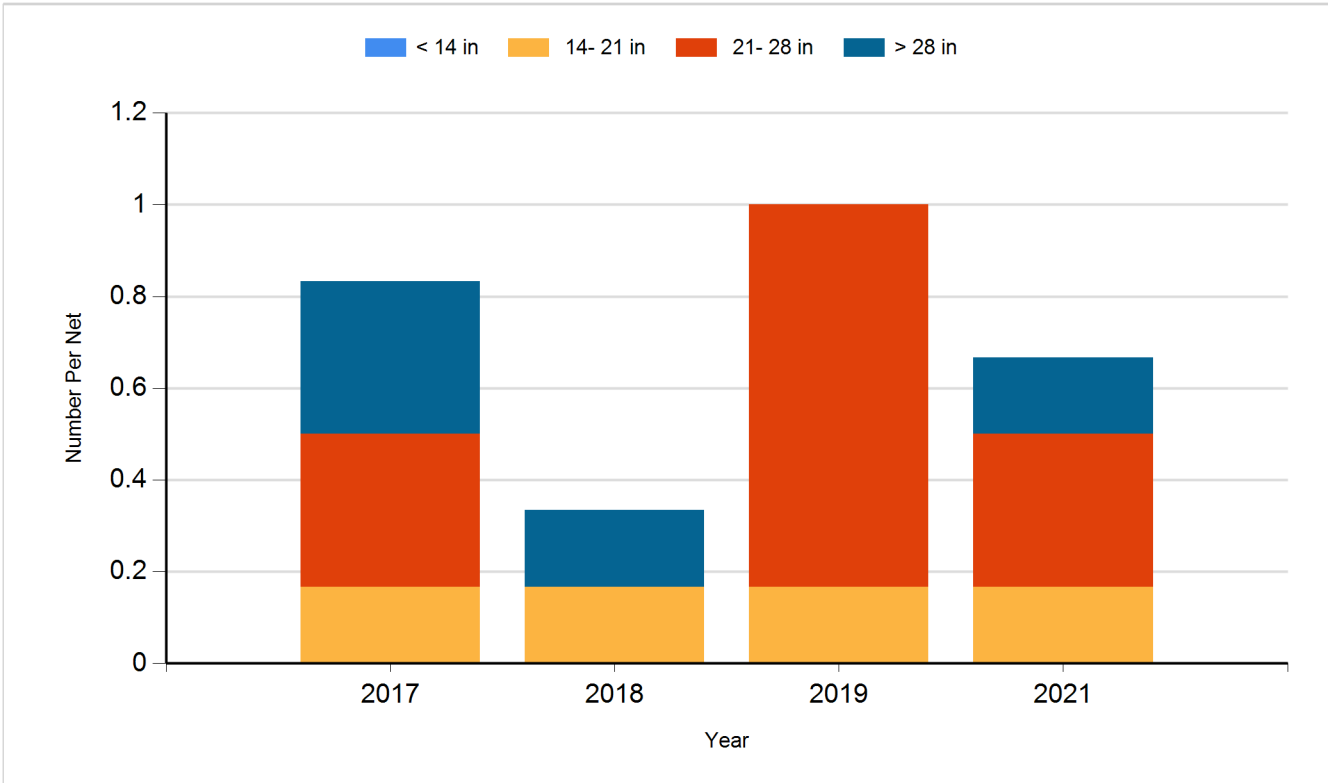
Species: Common Carp
Gear: AFS std gill net



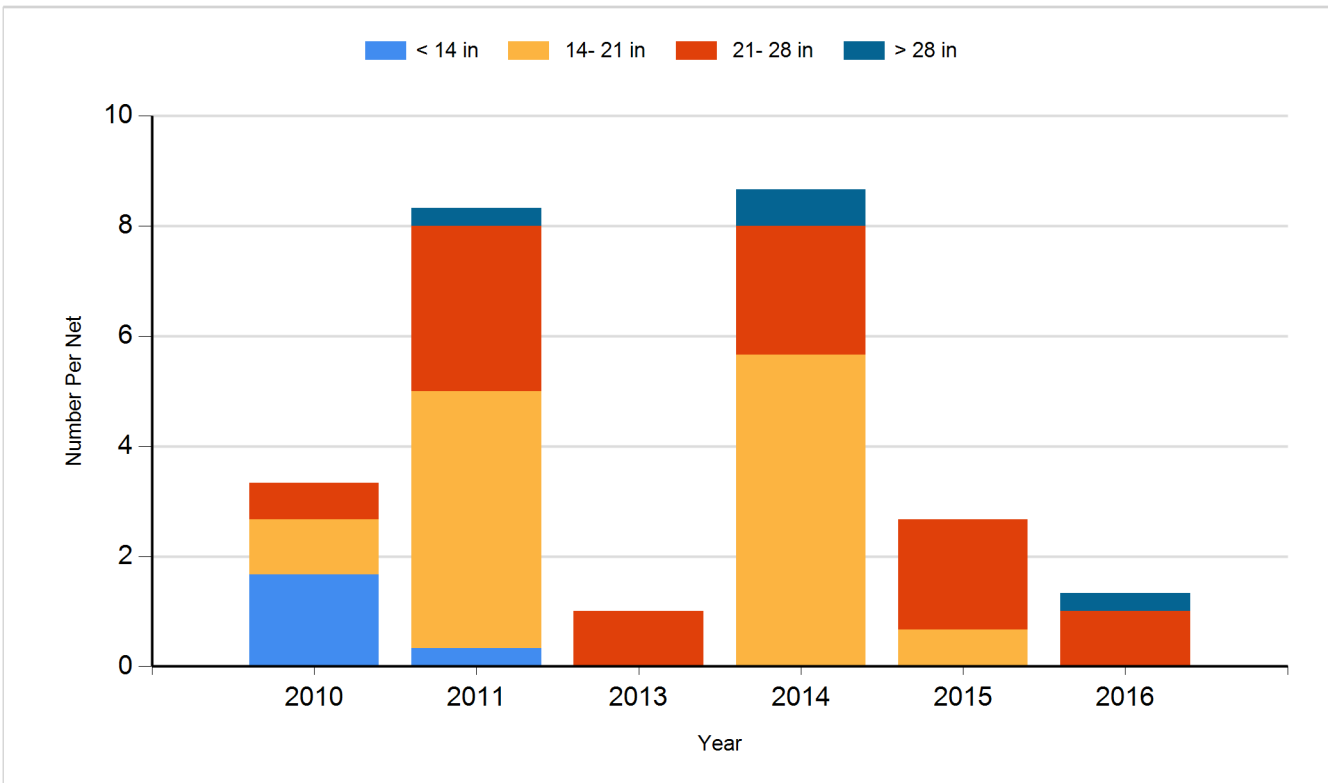
Species: Common Carp
Gear: std exp gill net



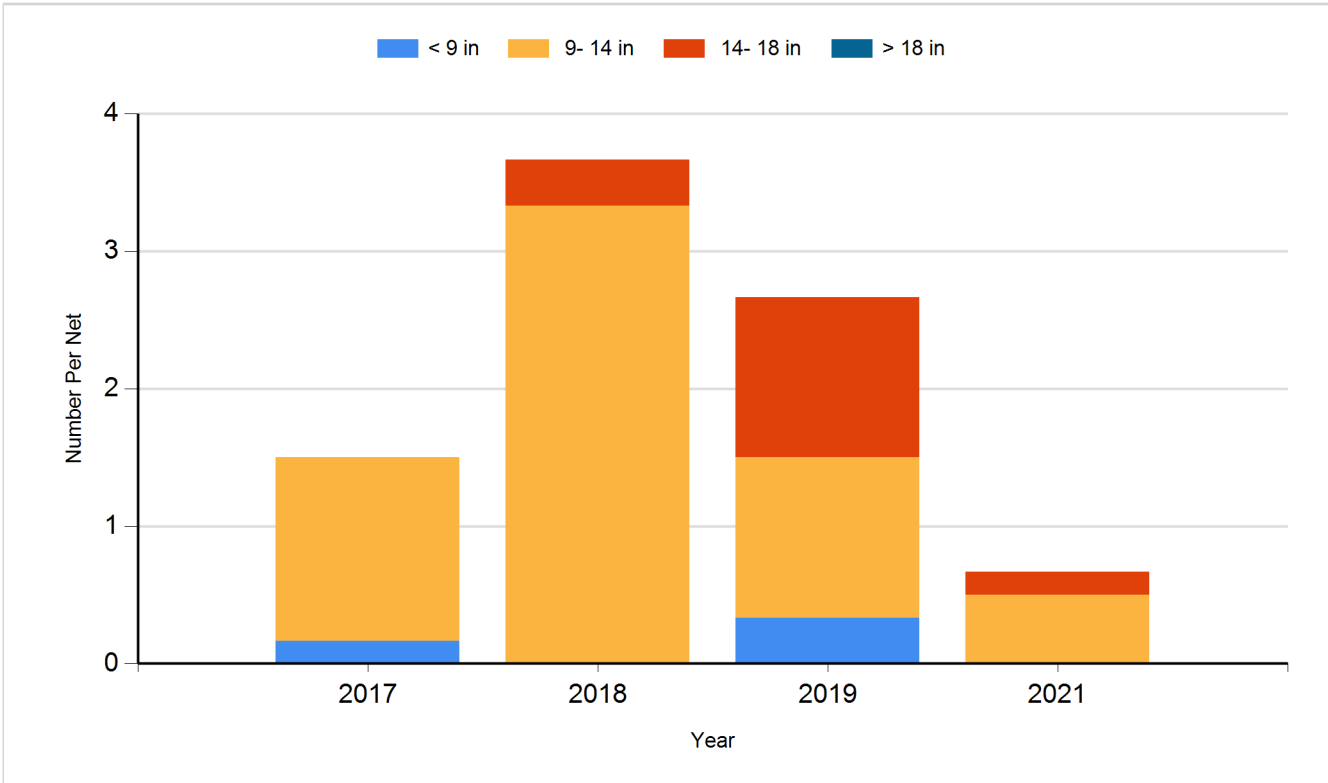
Species: Northern Pike
Gear: AFS std gill net



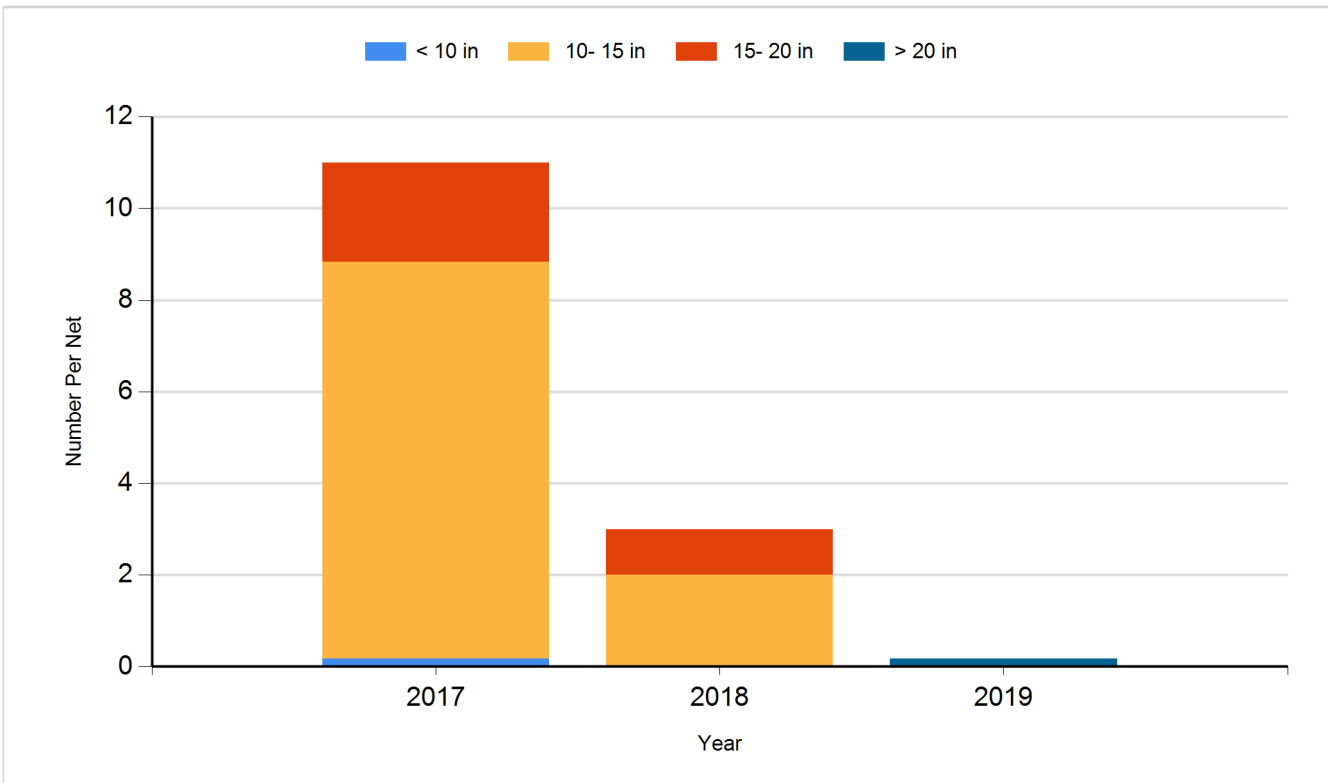
Species: Northern Pike
Gear: std exp gill net



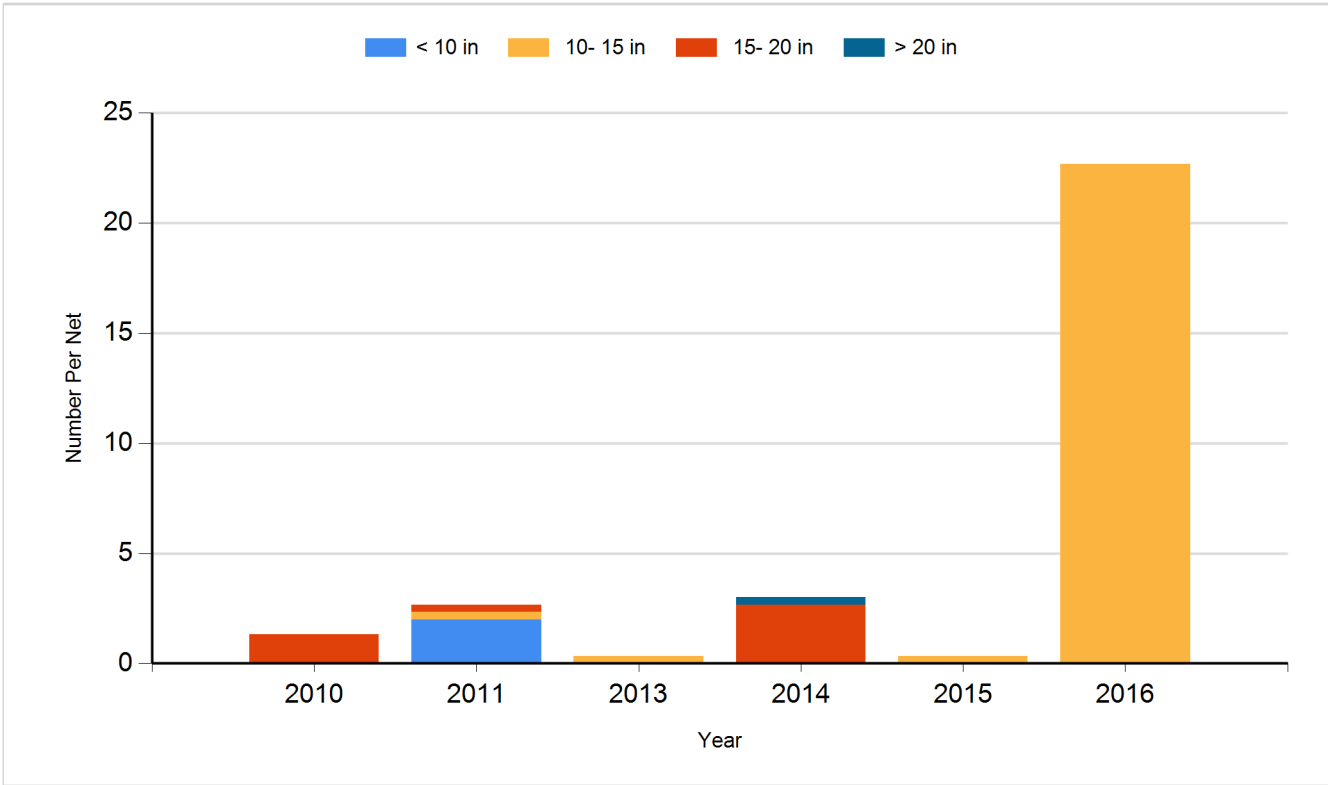
Species: Saugeye
Gear: AFS std gill net



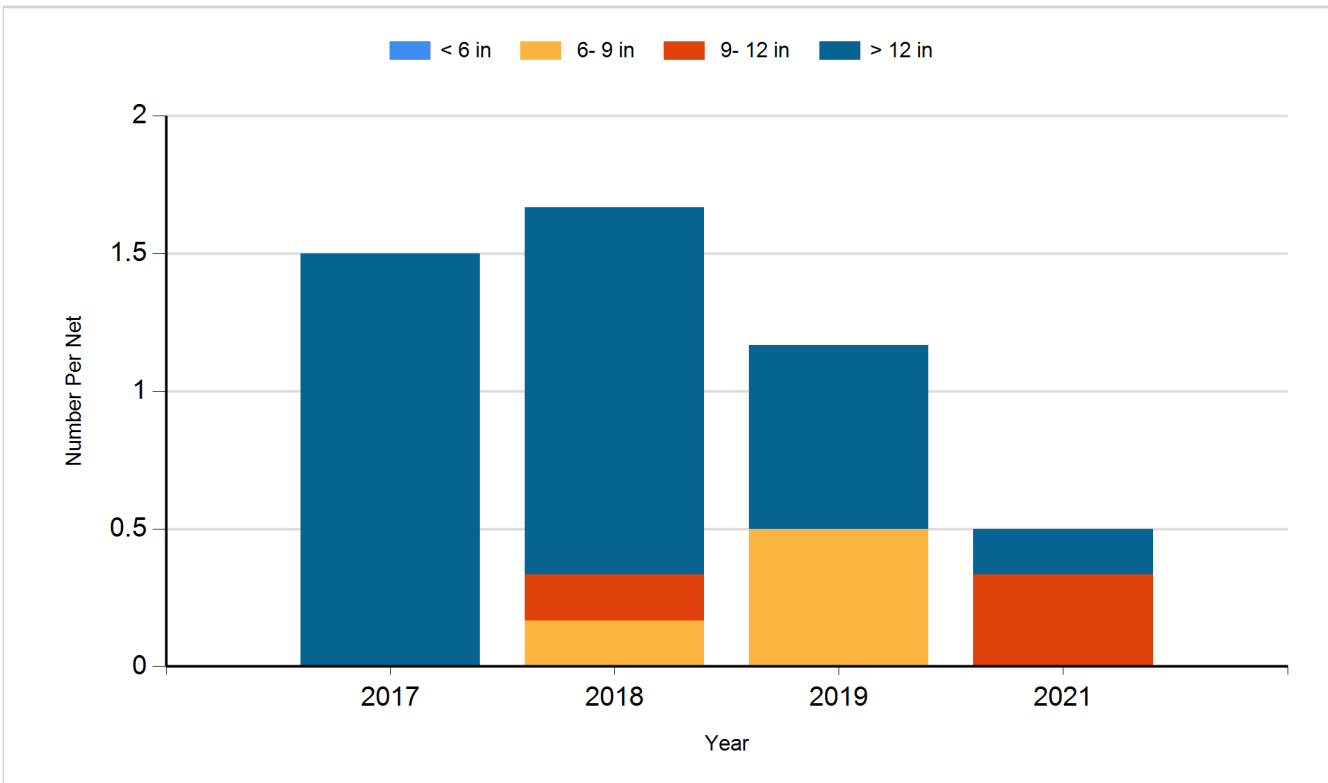
Species: Walleye
Gear: AFS std gill net



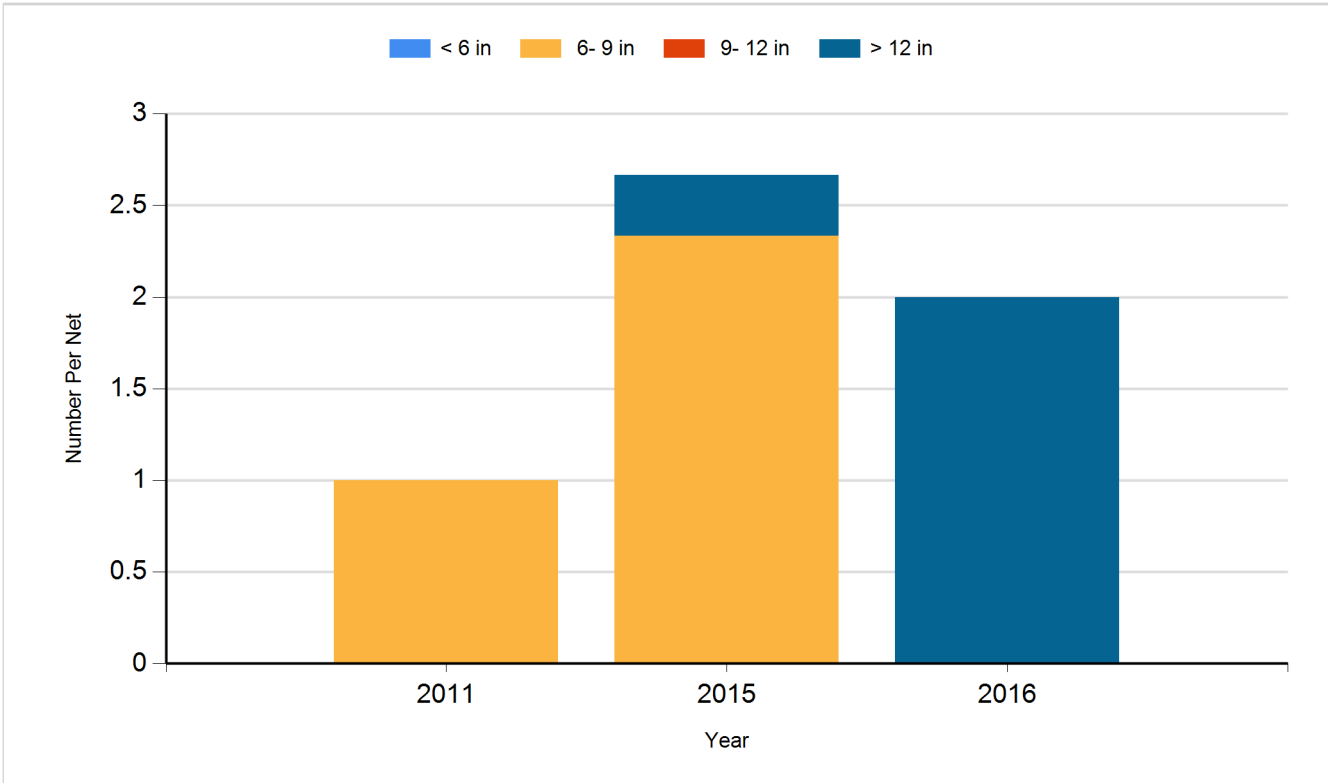
Species: Walleye
Gear: std exp gill net



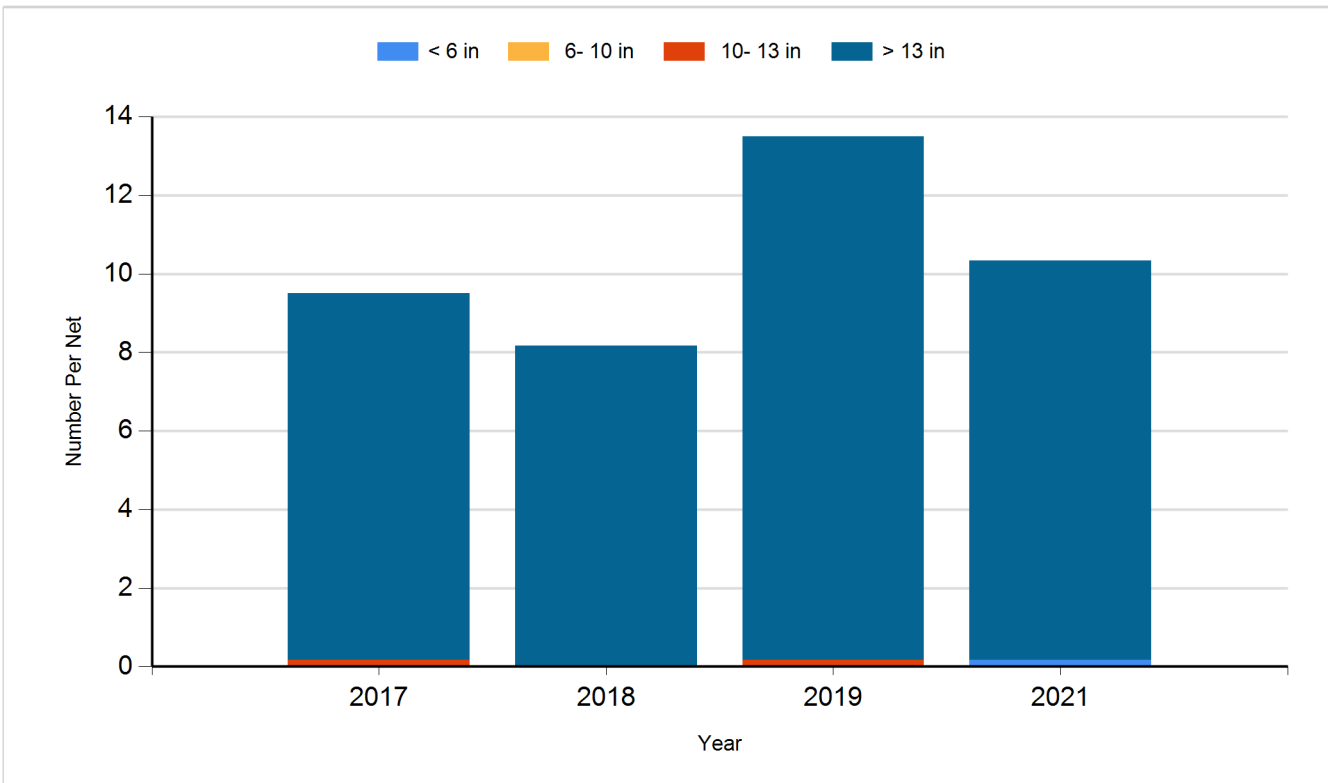
Species: White Bass
Gear: AFS std gill net



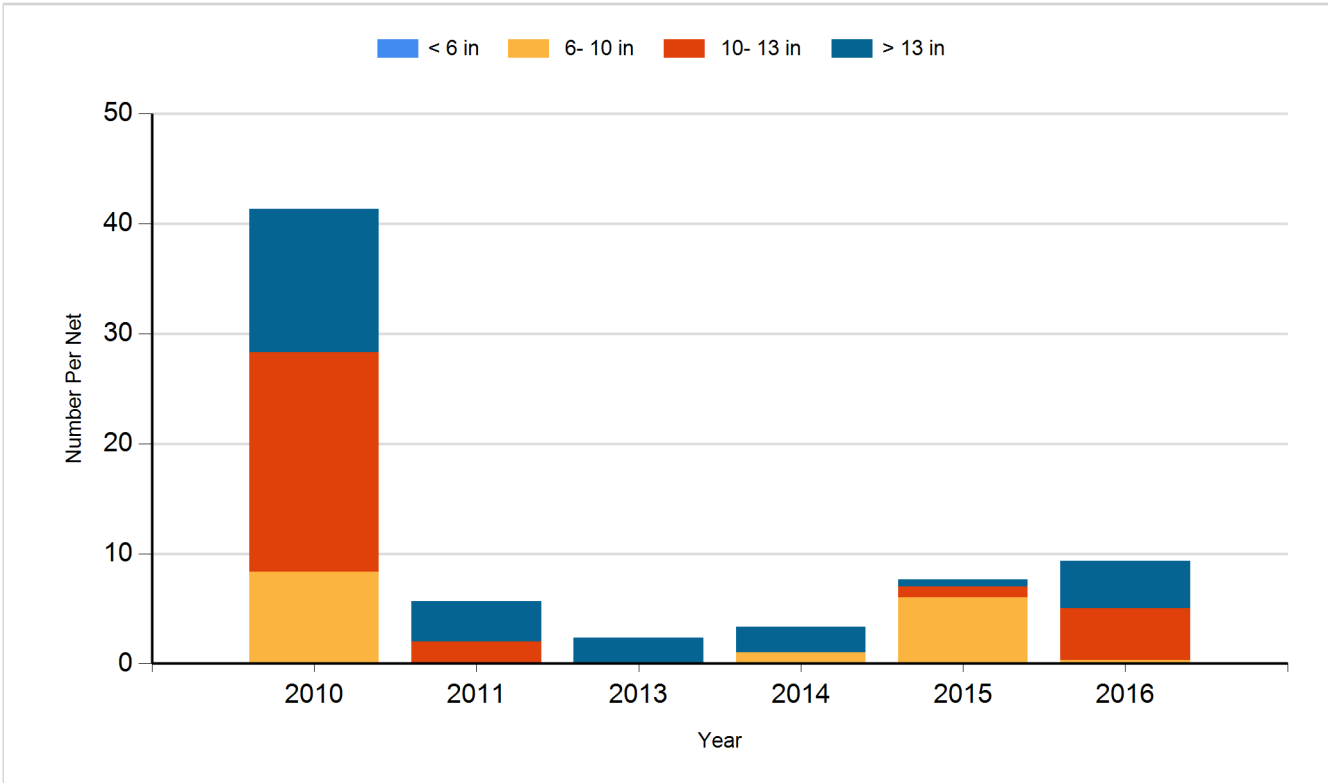
Species: White Bass
Gear: std exp gill net



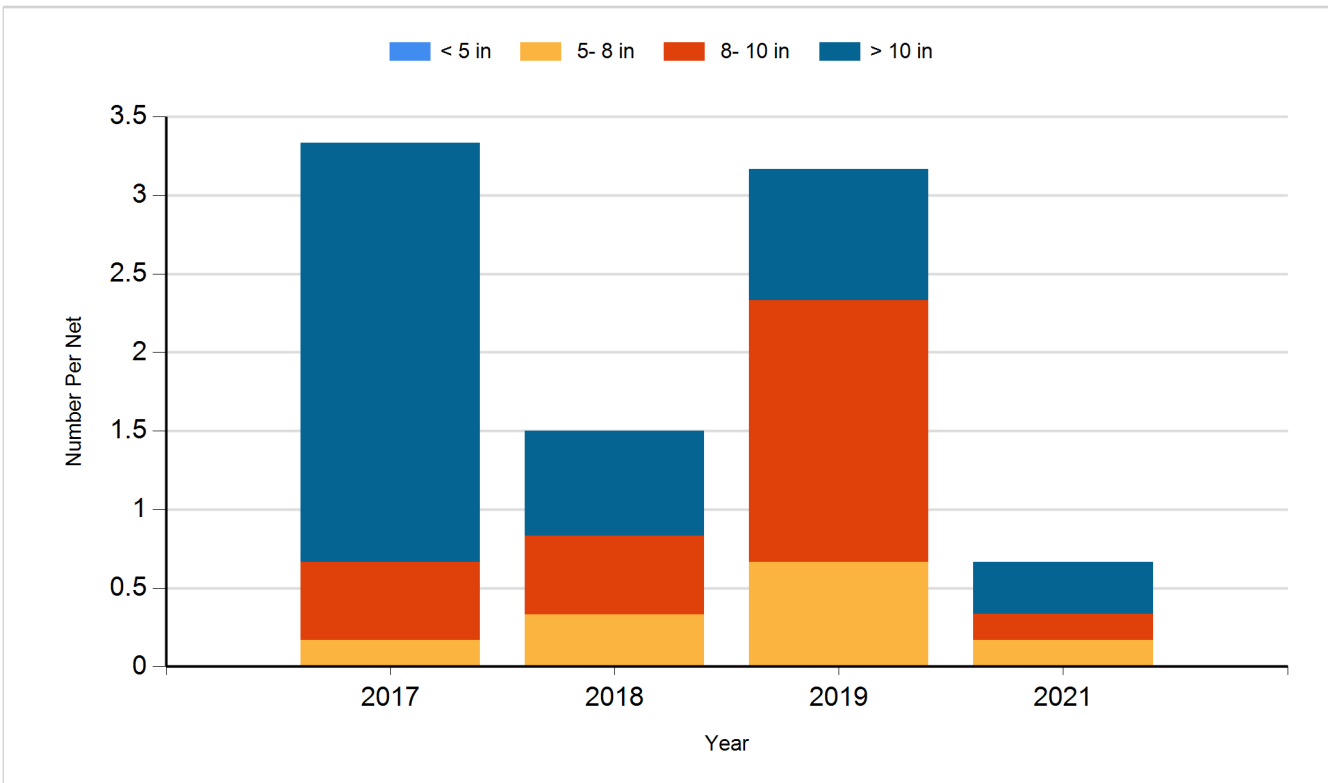
Species: White Sucker
Gear: AFS std gill net



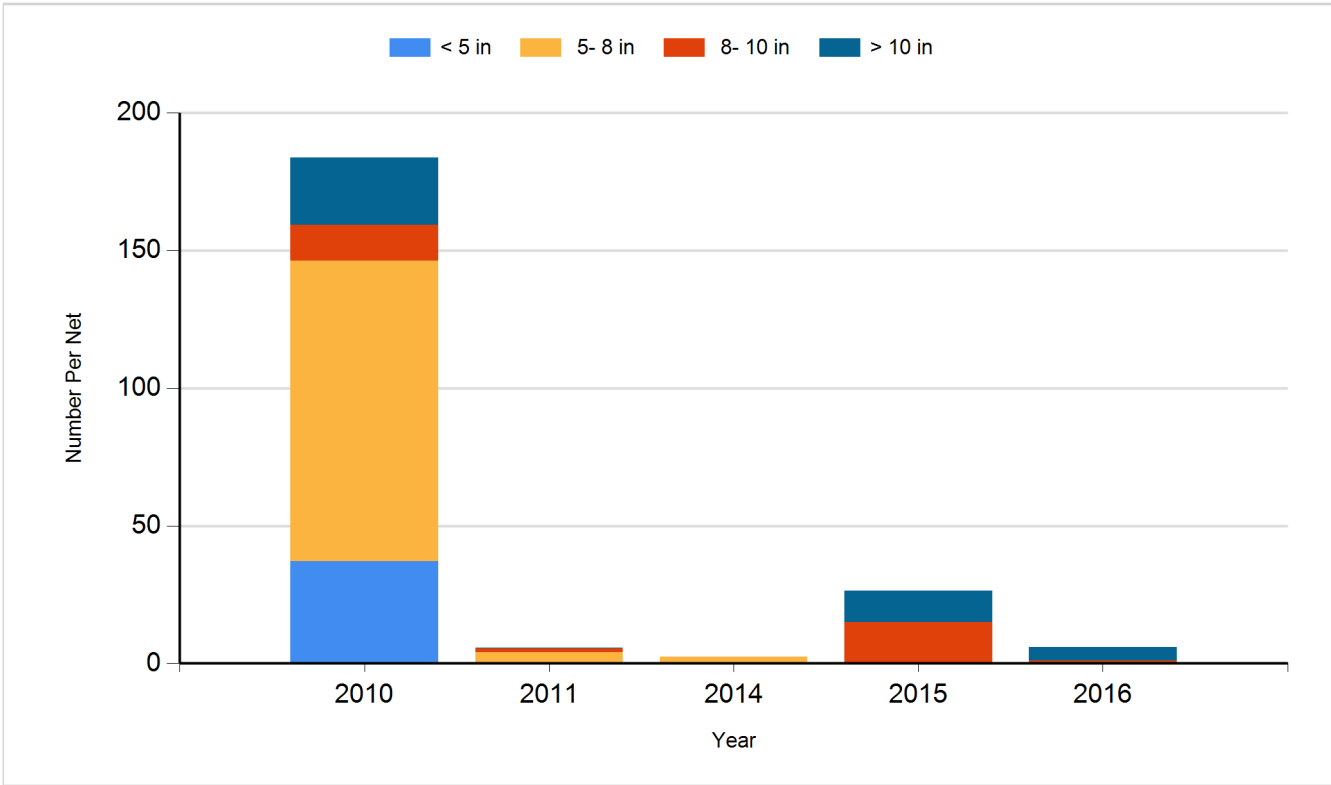
Species: White Sucker
Gear: std exp gill net



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
2010	Walleye	Small Fingerling	91,320
2014	Walleye	Fry	553,320
2015	Walleye	Fry	450,000
2016	Saugeye	Small Fingerling	46,310
2017	Saugeye	Small Fingerling	62,500
2017	Yellow Perch	Small Fingerling	510,590
2018	Saugeye	Small Fingerling	64,390
2018	Yellow Perch	Small Fingerling	455,780
2019	Saugeye	Small Fingerling	64,580
2019	Yellow Perch	Small Fingerling	487,470
2021	Saugeye	Juvenile	70,110