SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Goldsmith, Brookings County
MBS-Lake-236-000
2021

Lake Information

Name:	Goldsmith	**Maximum Depth:**	9 Feet
County:	Brookings	**Mean Depth:**	6 Feet
Legal Description:	T110N-R51W-Sec 9,16		
Surface Area:	308 Acres		

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

Yellow Perch

Walleye

Saugeye

Black Bullhead

Bigmouth Buffalo

White Sucker

Northern Pike

Common Carp

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.
- s**td experimental gill net for Missouri River reservoirs** – 300 ft experimental gill net containing six panels (50 ft each) of varying multifilament meshes of 0.5, 0.75, 1.00, 1.25, 1.50 and 2.00 inches.

$$CPUE = \frac{number\ of\ fish}{effort}$$

Population size structure is quantified using the indices proportional size distribution of quality-length fish (**PSD**) and proportional size distribution of preferred-length fish (**PSD-P**). These indices indicate the proportion of stock-length fish that are equal to or greater than a given length. Minimum lengths for stock, quality and preferred length fish are given in the length categories table.

$$PSD = \left(\frac{number\ of\ fish \geq quality\ length}{number\ of\ fish \geq stock\ length}\right) \text{x } 100$$

$$PSD - P = \left(\frac{number\ of\ fish \geq preferred\ length}{number\ of\ fish \geq stock\ length}\right) \text{x } 100$$

Relative weight (**Wr**) is used to quantify fish plumpness. Relative weight is the ratio of what a fish weighs (W) compared to a length-specific standard weight (Ws) multiplied by 100. Relative weight values of 95-105 are commonly cited as optimum values, but values in the 80s are common during summer sampling in South Dakota.

$$Wr = \left(\frac{W}{Ws}\right) \text{x } 100$$

Confidence intervals (**CI**) are provided for many of the estimates calculated in this report. The confidence interval provides a range in which the true mean is expected to fall. For example, with an 80% CI we are 80% confident that the interval contains the true value.

Length categories include stock (**S**), quality (**Q**), preferred (**P**), memorable (**M**) and trophy (**T**). Length categories for most species have been defined based on a percentage of the world record length for that species. Some species mentioned in this report do not have defined length categories. Length categories for species used in this report are provided in the following table. Measurements are the minimum total length for each category and are reported in inches (in) and centimeters (cm).

	Stock		Quality		Preferred		Memorable		Trophy	
Species Name	(in)	(cm)	(in)	(cm)	(in)	(cm)	(in)	(cm)	(in)	(cm)
Black Bullhead	6	15	9	23	12	30	15	38	18	46
Black Crappie	5	13	8	20	10	25	12	30	15	38
Bluegill	3	8	6	15	8	20	10	25	12	30
Brown Trout	8	20	12	30	16	40	20	50	18	46
Channel Catfish	11	28	16	41	24	61	28	71	36	91
Freshwater Drum	8	20	12	30	15	38	20	51	25	63
Lake Trout	12	30	20	50	26	65	31	80	39	100
Largemouth Bass	8	20	12	30	15	38	20	51	25	63
Muskellunge	20	51	30	76	38	97	42	107	50	127
Northern Pike	14	35	21	53	28	71	34	86	44	112
Pumpkinseed	3	8	6	15	8	20	10	25	12	30
Rainbow Trout	10	25	16	40	20	50	26	65	31	80
Rudd	6	15	10	25	12	30	15	38	19	48
Sauger	8	20	12	30	15	38	20	51	25	63
Smallmouth Bass	7	18	11	28	14	35	17	43	20	51
Walleye	10	25	15	38	20	51	25	63	30	76
White Bass	6	15	9	23	12	30	15	38	18	46
White Crappie	5	13	8	20	10	25	12	30	15	38
Yellow Bullhead	4	10	7	18	9	23	11	28	14	36
Yellow Perch	5	13	8	20	10	25	12	30	15	38

Catch Summary of Stock Length Fish

Catch per unit effort (CPUE), proportional size distribution (PSD), proportional size distribution of preferred length fish (PSD-P), and relative weight (Wr) for species sampled in survey with 80% confidence interval (CI-80).

*** Methods/Species that ignore stock length**

			Abundance		Stock Density Indices				Condition	
Gear	Species	Sample Size (n)	CPUE	CI-80	PSD	CI-80	PSD-P	CI-80	Wr	CI-80
AFS std gill net	Bigmouth Buffalo	13	1.8	1.9	100		36			
	Black Bullhead	26	4.3	2.5	81		0			
	Black Crappie	2	0.3	0.3	100		50		98	11
	Common Carp	3	0.5	0.5	100		67			
	Northern Pike	5	0.8	0.2	60		0		81	7
	Saugeye	45	7.5	2.2	93		40	11	88	1
	White Sucker	9	1.5	0.3	100		100			
	Yellow Perch	6	1.0	0.5	100		33		103	3

10-Year Catch Per Unit Effort by Gear and Species

Catch per unit effort (CPUE) and average (Avg) of species across 10 years using different gear types.

*** Methods/Species that ignore stock length**

		CPUE										
Gear	Species	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Avg
AFS std gill net	Bigmouth Buffalo						0.0	5.5	1.2		1.8	2.13
	Black Bullhead						1.0	2.8	0.5		4.3	2.15
	Black Crappie						0.0	0.0	0.0		0.3	0.08
	Common Carp						0.2	2.3	1.0		0.5	1.00
	Northern Pike						2.0	0.8	1.5		0.8	1.28
	Saugeye						0.7	0.5	4.0		7.5	3.18
	Walleye						2.0	8.7	3.2		0.0	3.48
	White Sucker						1.7	1.5	0.7		1.5	1.35
	Yellow Perch						5.0	2.8	0.7		1.0	2.38
frame net (std 3/4 in)	Bigmouth Buffalo		6.6									6.60
	Black Bullhead		10.8									10.80
	Bluegill		0.4									0.40
	Common Carp		1.2									1.20
	Northern Pike		1.4									1.40
	Walleye		3.4									3.40
	White Bass		1.2									1.20
	White Crappie		0.6									0.60
	White Sucker		0.2									0.20
std exp gill net	Bigmouth Buffalo		0.0	0.0	0.0	0.0						0.00
	Black Bullhead		1.0	7.7	9.3	0.0						4.50
	Common Carp		0.7	0.3	0.3	0.3						0.40
	Northern Pike		3.0	1.0	1.3	2.3						1.90
	Orangespotted Sunfish		0.0	0.0	0.0	0.0						0.00
	Saugeye		0.0	0.0	0.0	0.0						0.00
	Walleye		5.3	0.0	0.0	6.3						2.90
	White Sucker		2.7	4.0	1.0	4.0						2.93
	Yellow Perch		1.3	5.0	7.0	40.3						13.40

10-Year Size Structure and Condition Statistics by Gear and Species

Species proportional size distribution (PSD), proportional size distribution of preferred length fish (PSD-P), and relative weight (Wr) collected by different gear types across 10 years.

			Year									
Gear	Species	Index	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
AFS std gill net	Bigmouth Buffalo	PSD							12	100		100
		PSD-P							3	0		36
	Black Bullhead	PSD						0	18	100		81
		PSD-P						0	0	33		0
	Black Crappie	PSD										100
		PSD-P										50
		Wr										98
	Common Carp	PSD						100	79	100		100
		PSD-P						100	7	50		67
	Northern Pike	PSD						92	80	56		60
		PSD-P						8	20	33		0
		Wr						88	100	88		81
	Saugeye	PSD						0	100	63		93
		PSD-P						0	0	25		40
		Wr						99	93	93		88
	Walleye	PSD						17	96	100		
		PSD-P						0	0	32		
		Wr						89	93	92		
	White Sucker	PSD						100	100	100		100
		PSD-P						80	78	75		100
	Yellow Perch	PSD						67	94	25		100
		PSD-P						50	12	25		33
		Wr						111	99	108		103
frame net (std 3/4 in)	Bigmouth Buffalo	PSD		97								
		PSD-P		67								
		Wr		119								
	Black Bullhead	PSD		48								
		PSD-P		0								
		Wr		88								
	Common Carp	PSD		100								
		PSD-P		50								
		Wr		89								
	Northern Pike	PSD		86								

			Year									
Gear	Species	Index	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
frame net (std 3/4 in)	Northern Pike	PSD-P		0								
		Wr		88								
	Walleye	PSD		41								
		PSD-P		12								
		Wr		100								
	White Sucker	PSD		100								
		PSD-P		100								
		Wr		97								
std exp gill net	Bigmouth Buffalo	PSD		0	0							
		PSD-P		0	0							
	Black Bullhead	PSD		0	26	4						
		PSD-P		0	0	0						
		Wr		111								
	Common Carp	PSD		100	100	0	100					
		PSD-P		100	100	0	100					
		Wr		80								
	Northern Pike	PSD		89	0	50	86					
		PSD-P		33	0	0	29					
		Wr		97	94	77	84					
	Saugeye	PSD					0					
		PSD-P					0					
	Walleye	PSD		31		0	0					
		PSD-P		6		0	0					
		Wr		94			96					
	White Sucker	PSD		88	92	100	83					
		PSD-P		88	33	100	58					
		Wr		97								
	Yellow Perch	PSD		50	60	43	75					
		PSD-P		0	0	33	8					
		Wr		111	106	105	107					

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	24	273 (9)	401 (5)	464 (10)							
2018	3		423 (3)								

Species: Walleye

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2019	18				455 (2)	487 (15)		628 (1)			
2018	52	298 (1)	411 (12)	409 (5)	452 (34)						

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	4	144 (3)		278 (1)							

Fish Condition

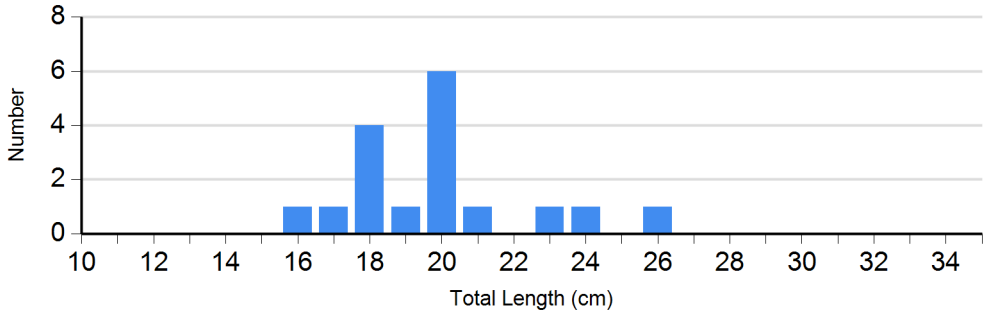
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Northern Pike Gill Net	2017	1	107	10	86 (2.3)	1	93	0	
	2018	1	117	3	95 (3.0)	0		1	
	2019	4	85 (2.2)	2	90 (2.0)	2	93 (17.6)	1	
	2021	2	92 (3.8)	3	73 (3.9)	0		0	
Saugeye Gill Net	2017	4	99 (4.2)	0		0		0	
	2018	0		3	93 (3.6)	0		0	
	2019	9	96 (1.9)	9	98 (2.5)	6	83 (14.4)	0	
	2021	3	89 (4.8)	24	90 (1.0)	12	86 (1.3)	6	87 (2.7)
Walleye Gill Net	2017	10	89 (1.8)	2	90 (2.3)	0		0	
	2018	2	96 (0.2)	50	93 (0.7)	0		0	
	2019	0		13	92 (1.3)	6	93 (2.0)	0	
Yellow Perch Gill Net	2017	10	106 (3.8)	5	117 (4.6)	14	112 (1.9)	1	100
	2018	1	120	14	97 (1.5)	2	102 (3.6)	0	
	2019	3	116 (4.2)	0		1	84	0	
	2021	0		4	105 (3.7)	2	100 (0.8)	0	

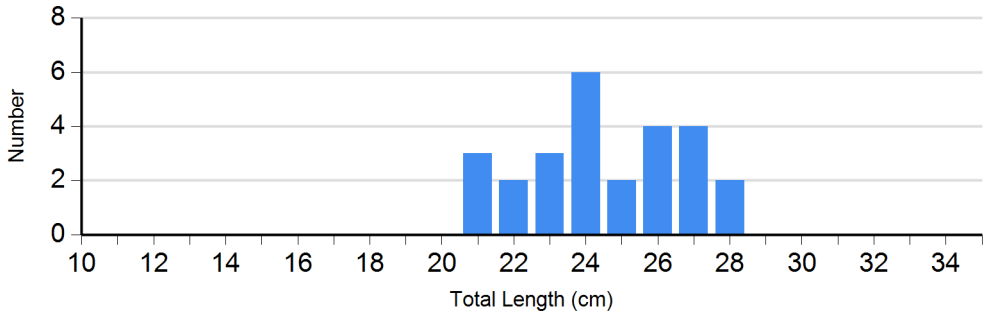
Length Frequency Distribution

Length frequency histogram of species sampled by year.

Species: Black Bullhead
Gear: AFS std gill net

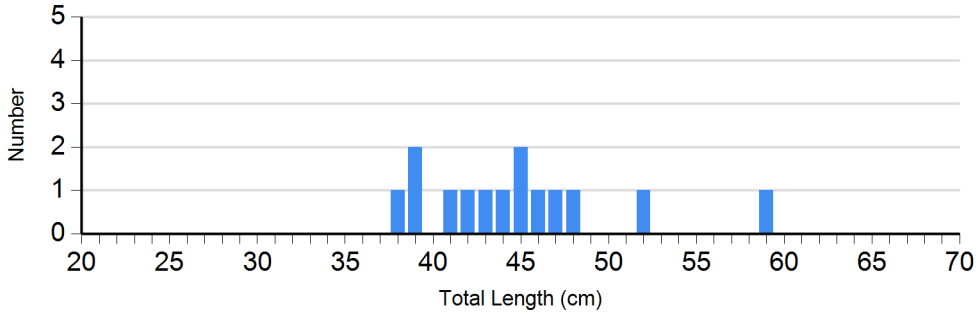


2018



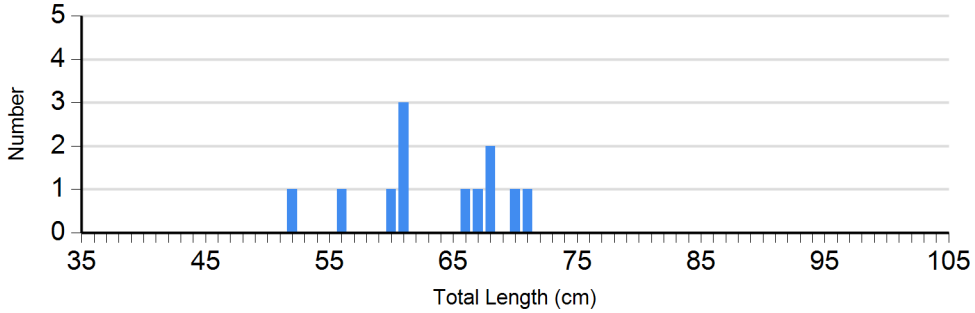
2021

Species: Common Carp
Gear: AFS std gill net



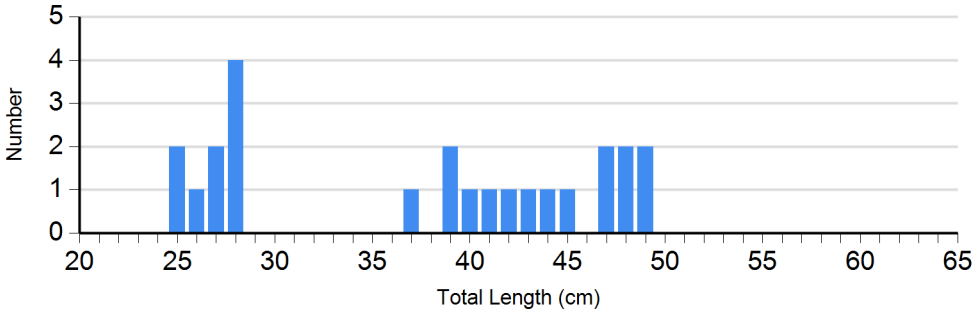
2018

Species: Northern Pike
Gear: AFS std gill net

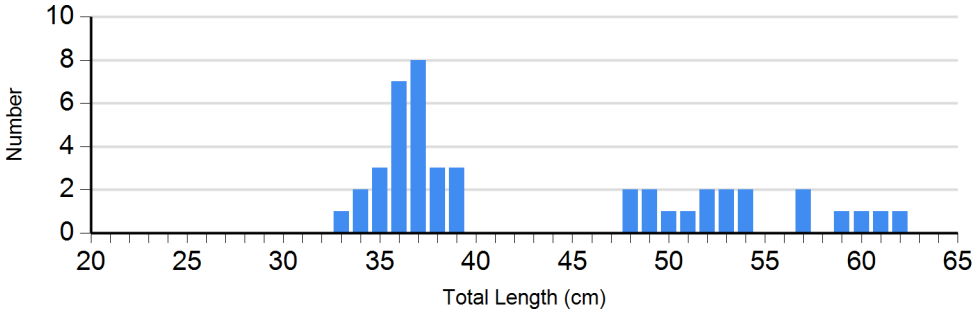


2017

Species: Saugeye
Gear: AFS std gill net

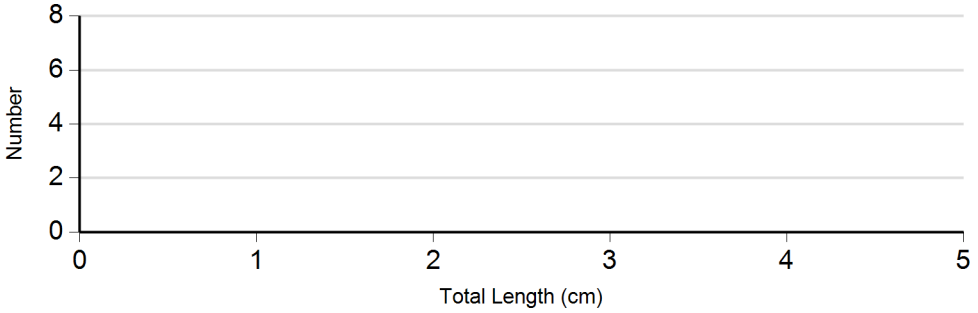


2019



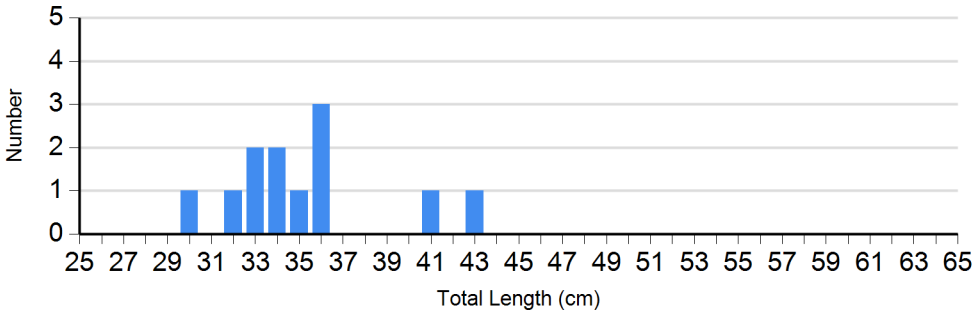
2021

Species: Saugeye
Gear: std exp gill net

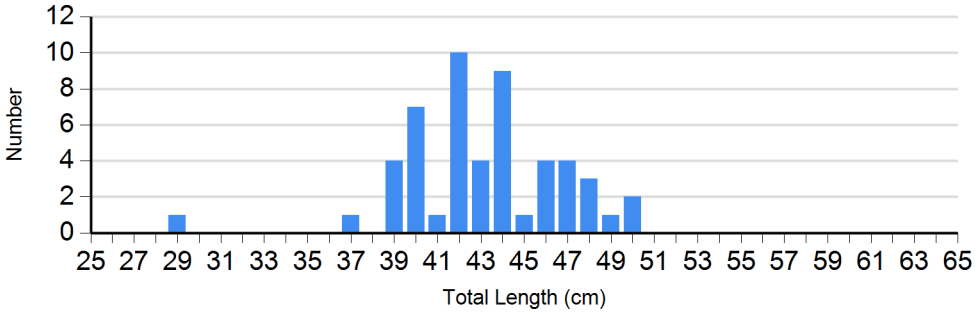


2016

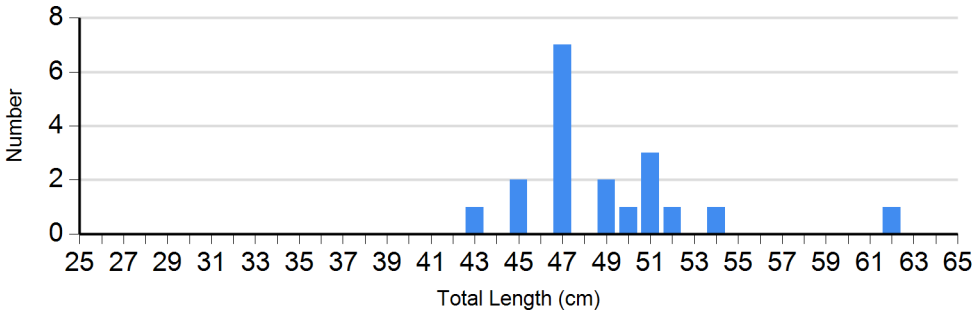
Species: Walleye
Gear: AFS std gill net



2017

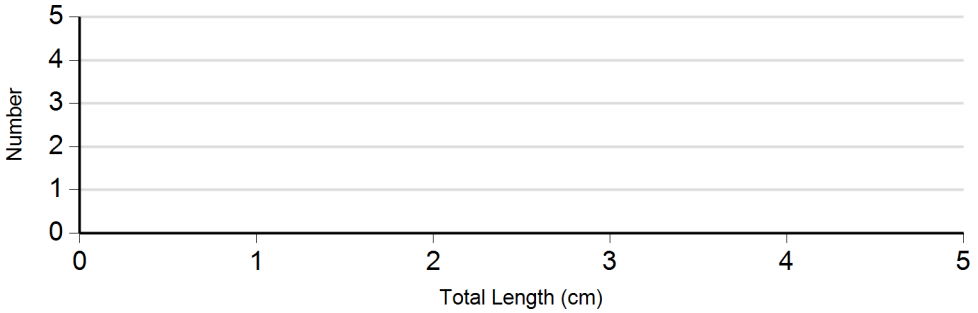


2018



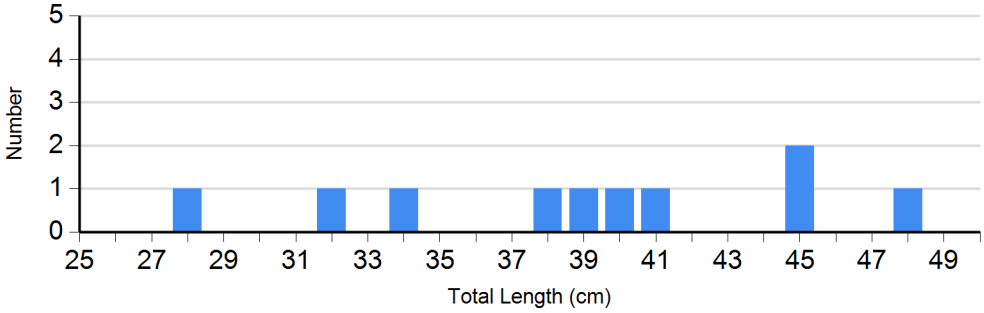
2019

Species: Walleye
Gear: std exp gill net



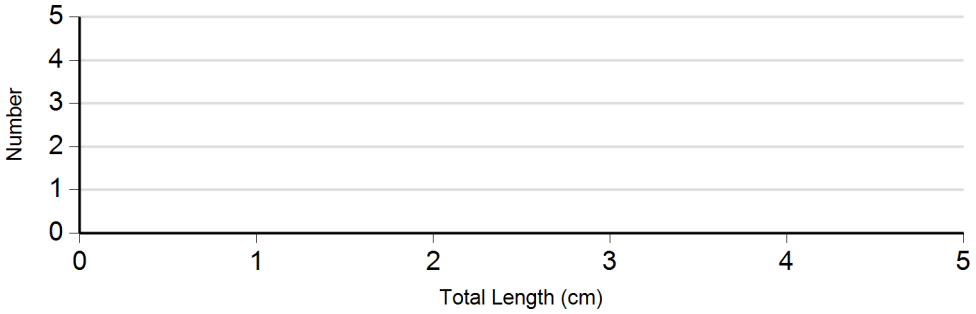
2016

Species: White Sucker
Gear: AFS std gill net



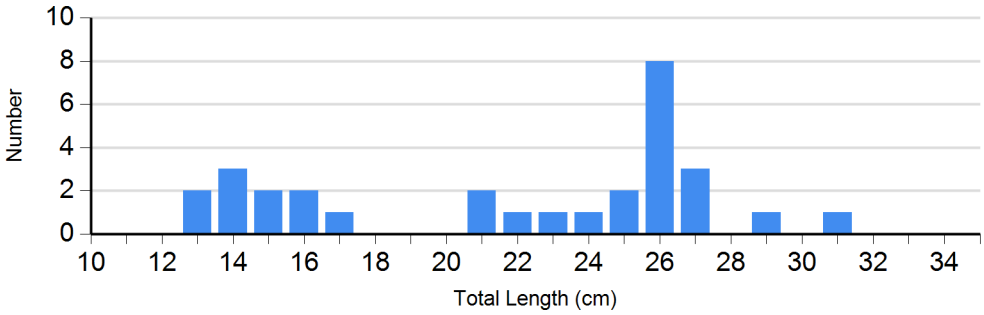
2017

Species: White Sucker
Gear: std exp gill net

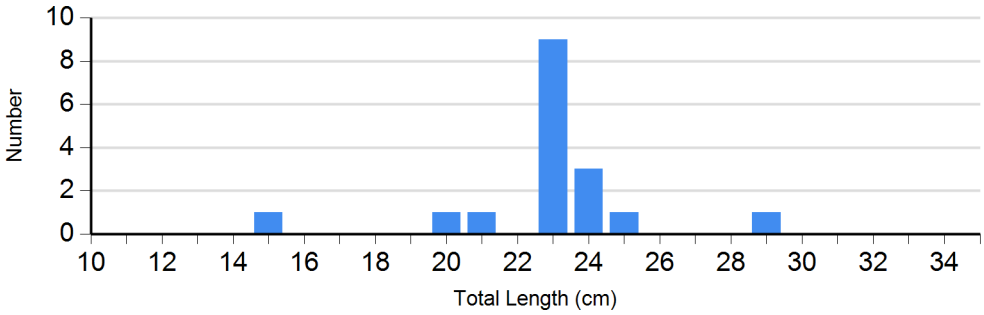


2016

Species: Yellow Perch
Gear: AFS std gill net

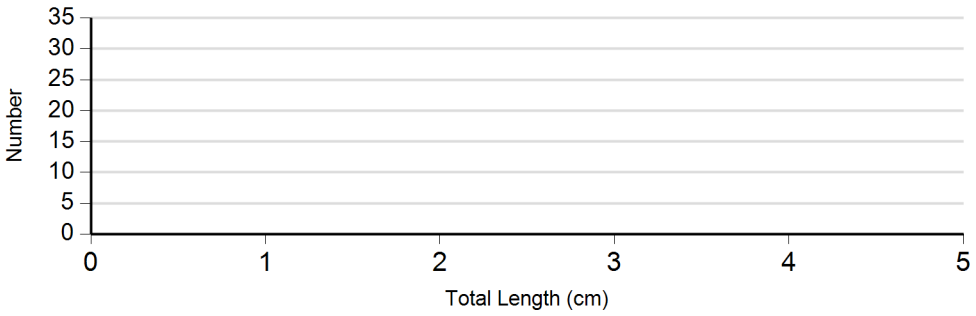


2017



2018

Species: Yellow Perch
Gear: std exp gill net

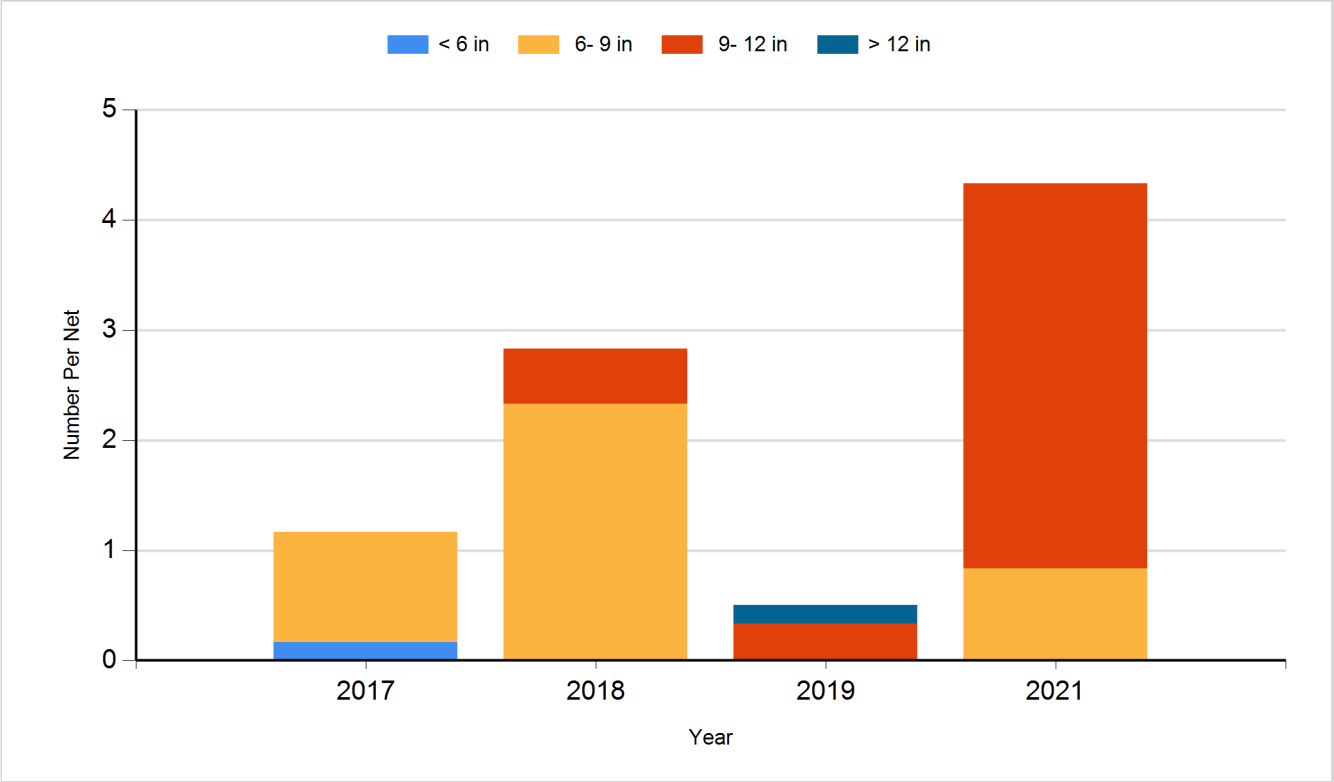


2016

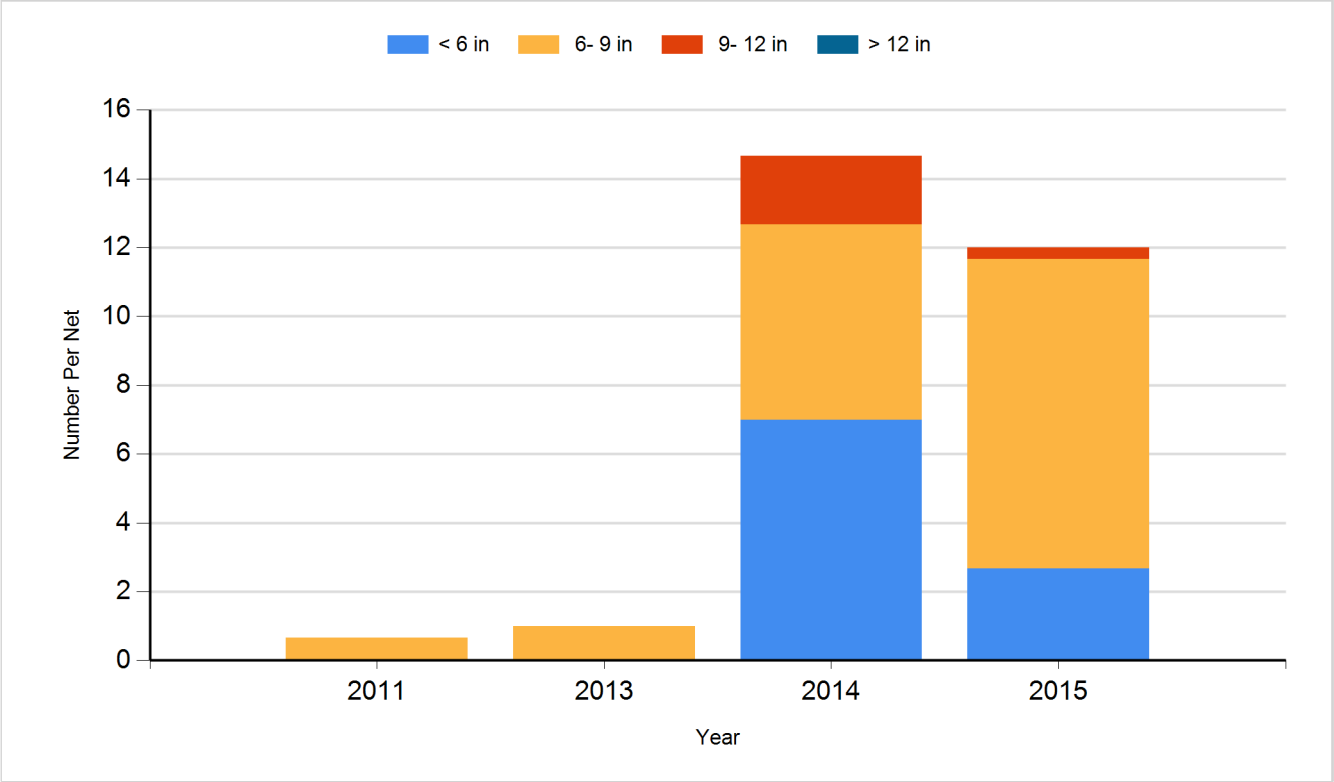
Historic Fish Sizes and Relative Abundance

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

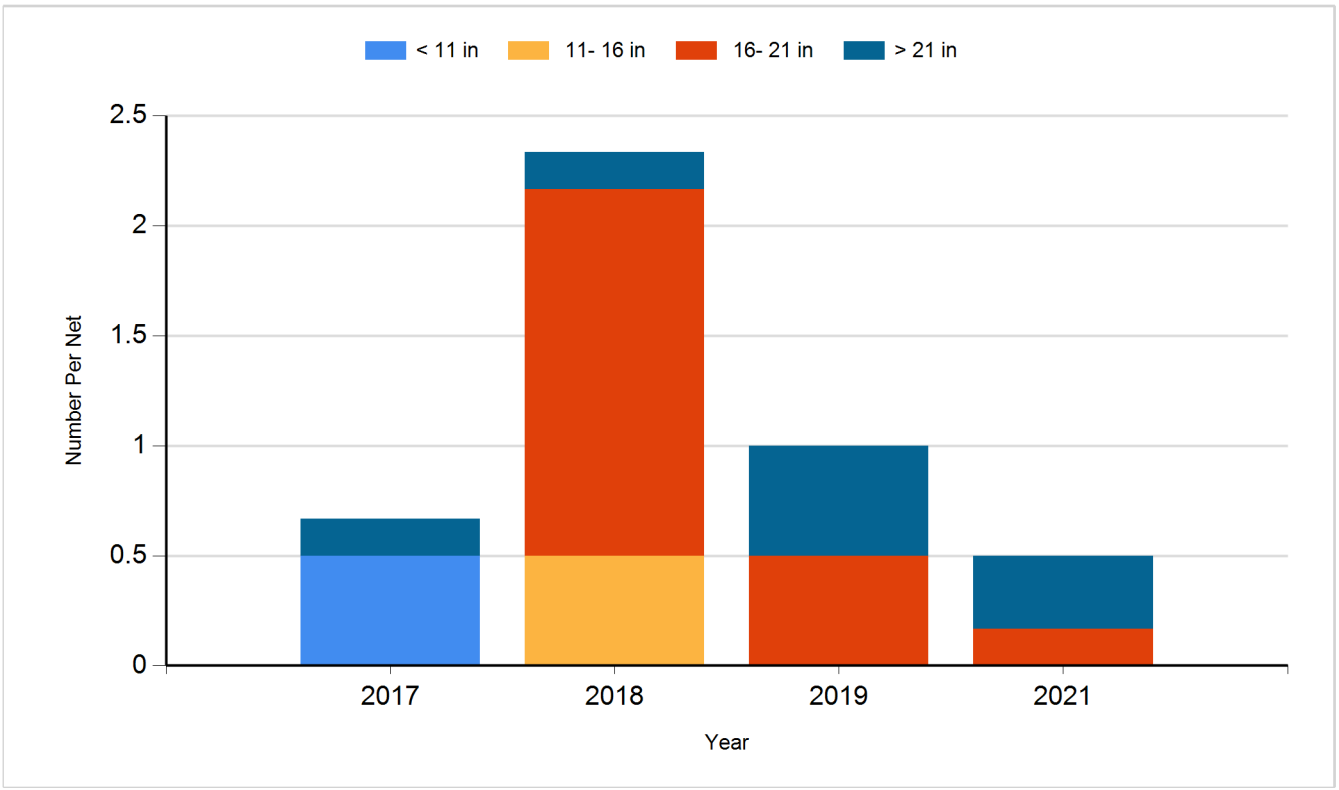
Species: Black Bullhead
Gear: AFS std gill net



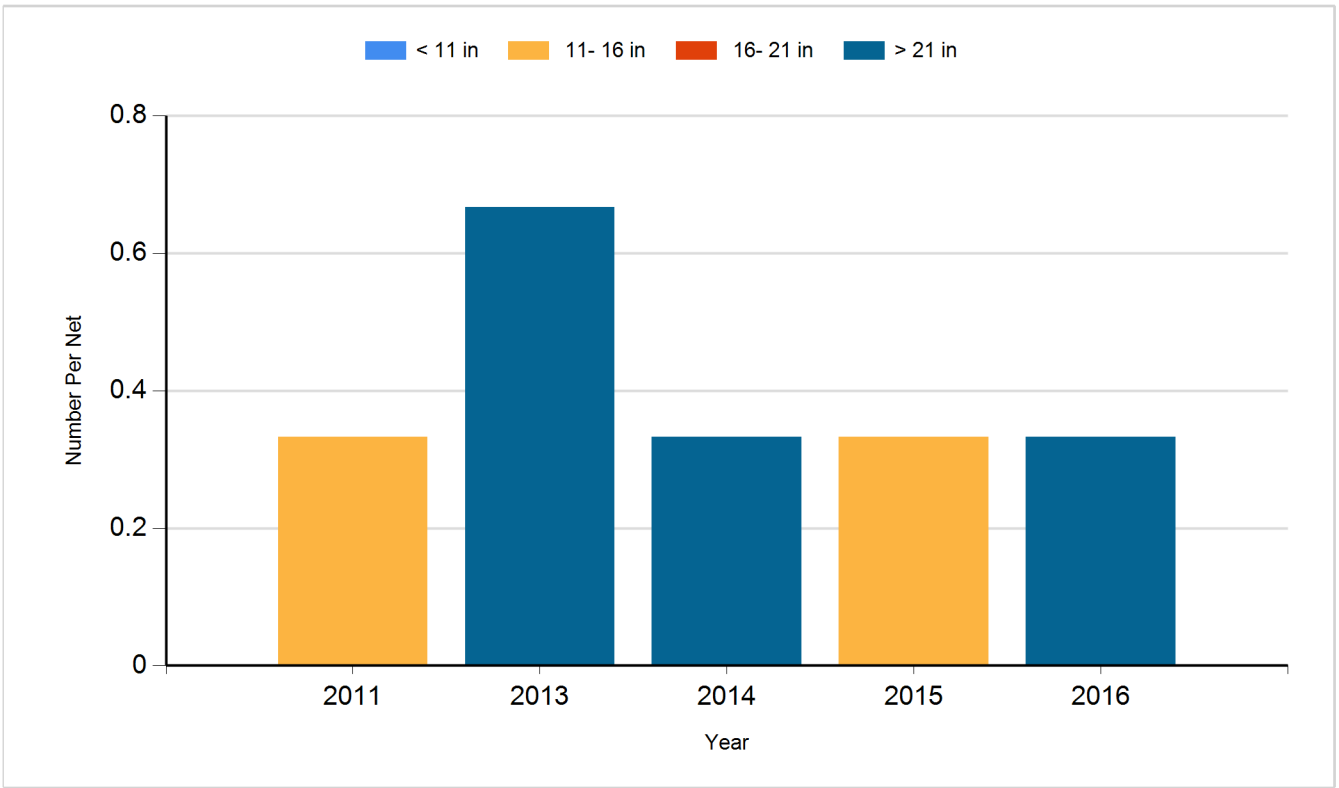
Species: Black Bullhead
Gear: std exp gill net



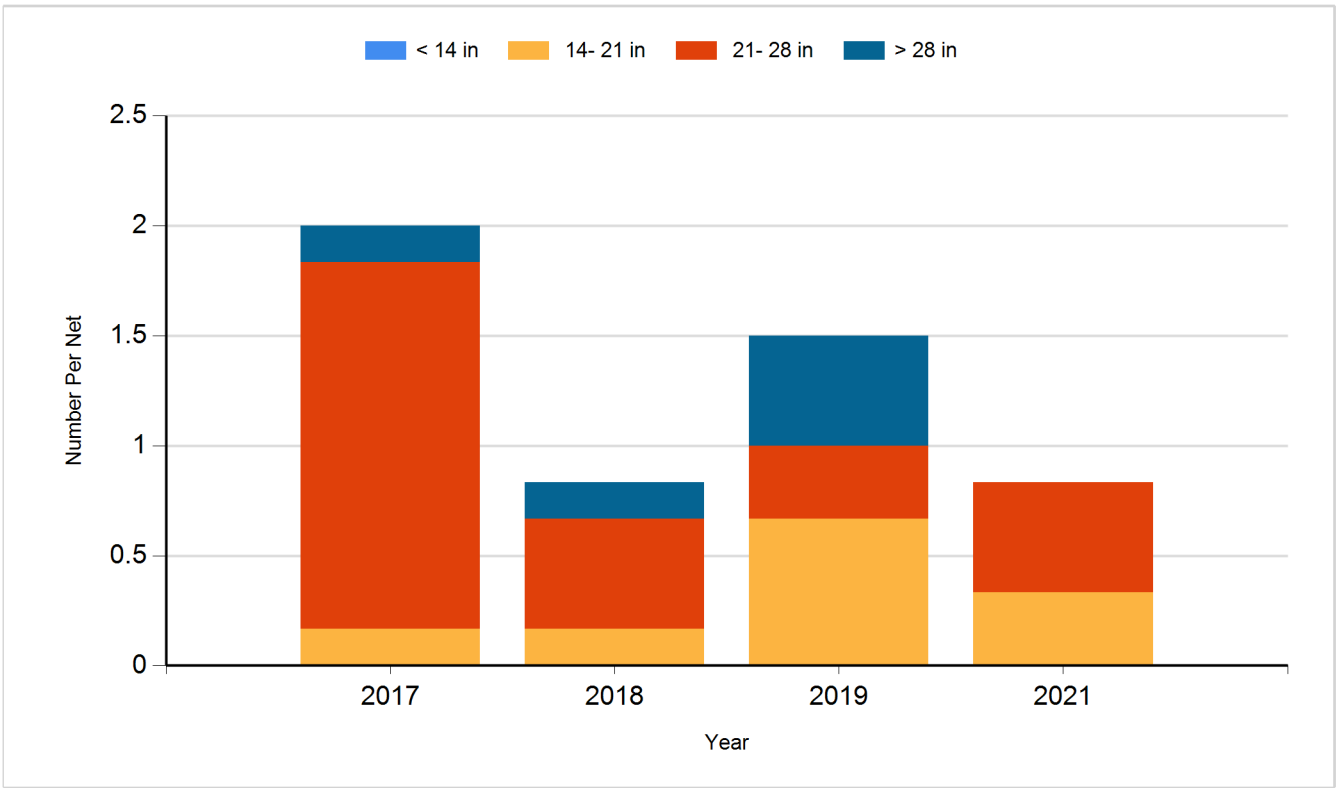
Species: Common Carp
Gear: AFS std gill net



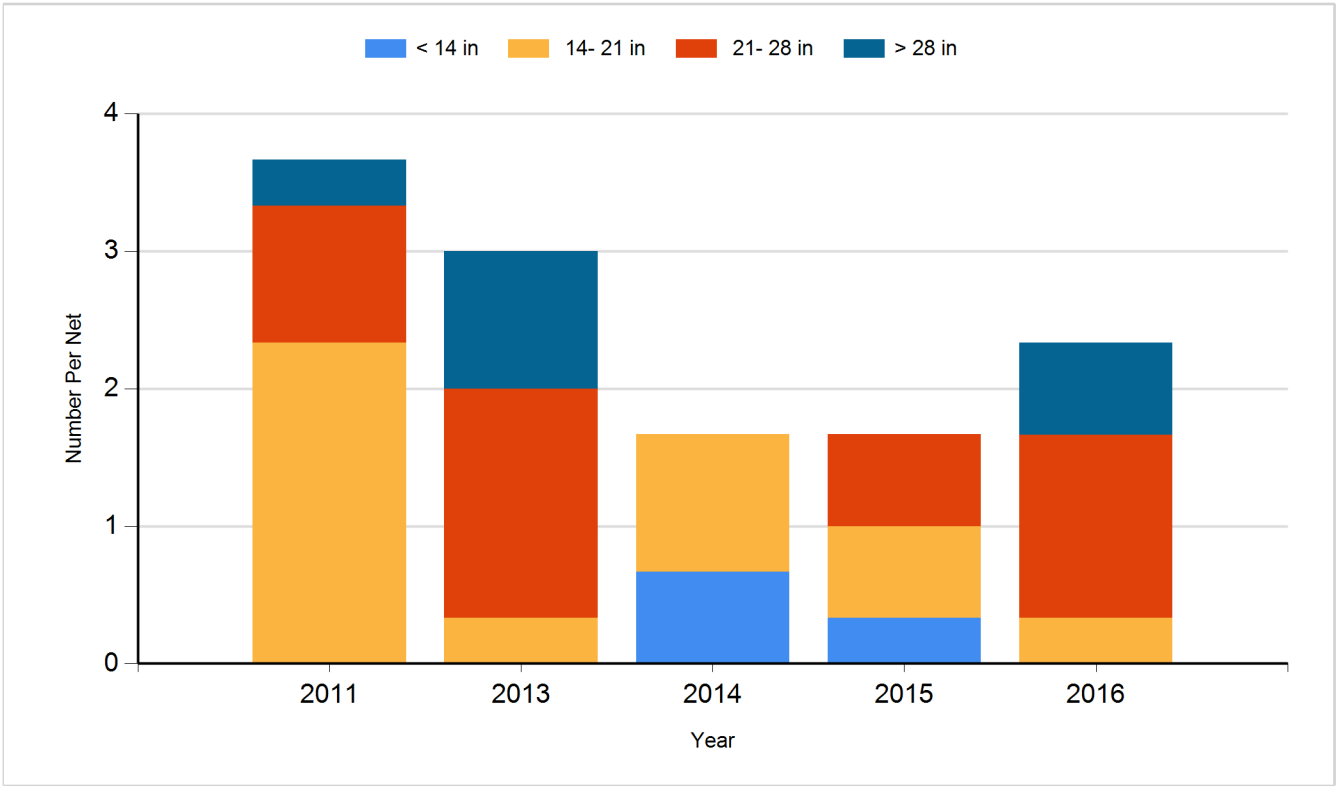
Species: Common Carp
Gear: std exp gill net



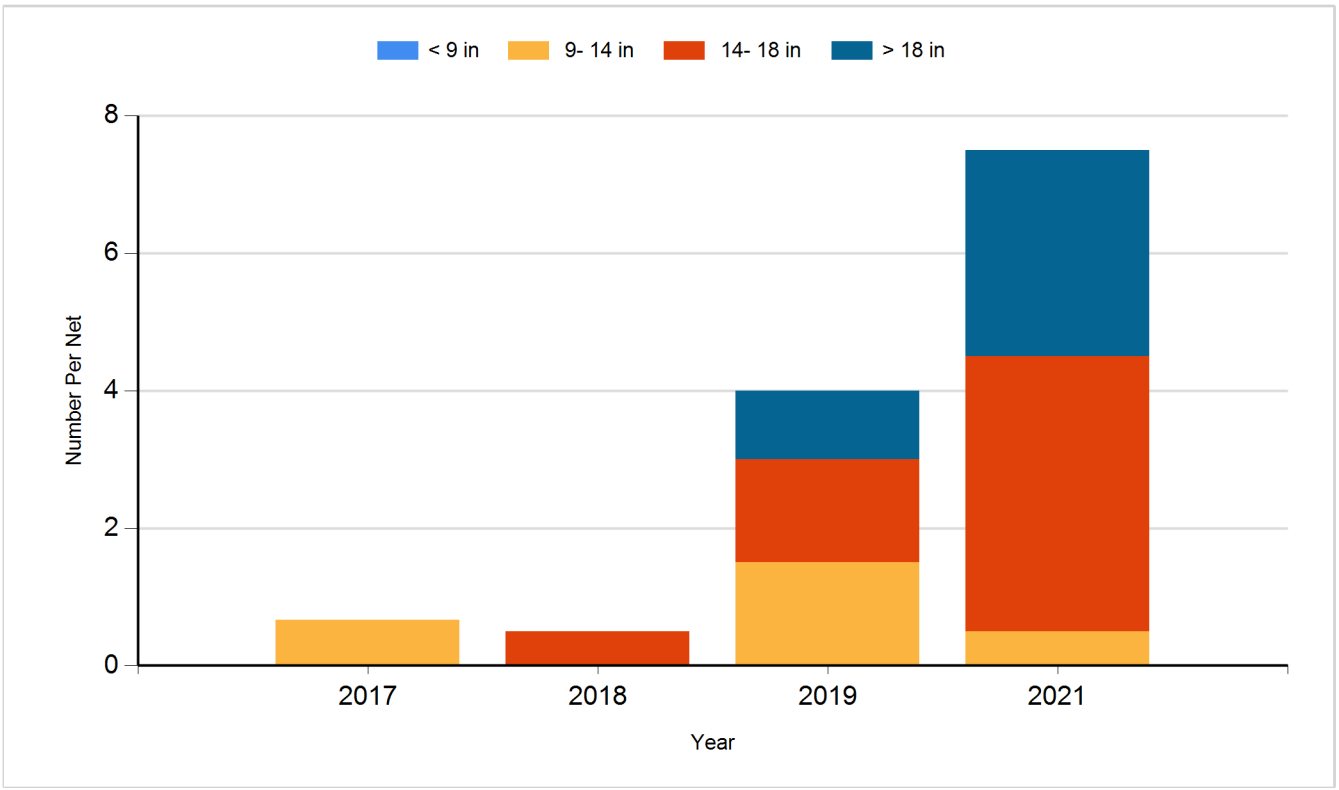
Species: Northern Pike
Gear: AFS std gill net



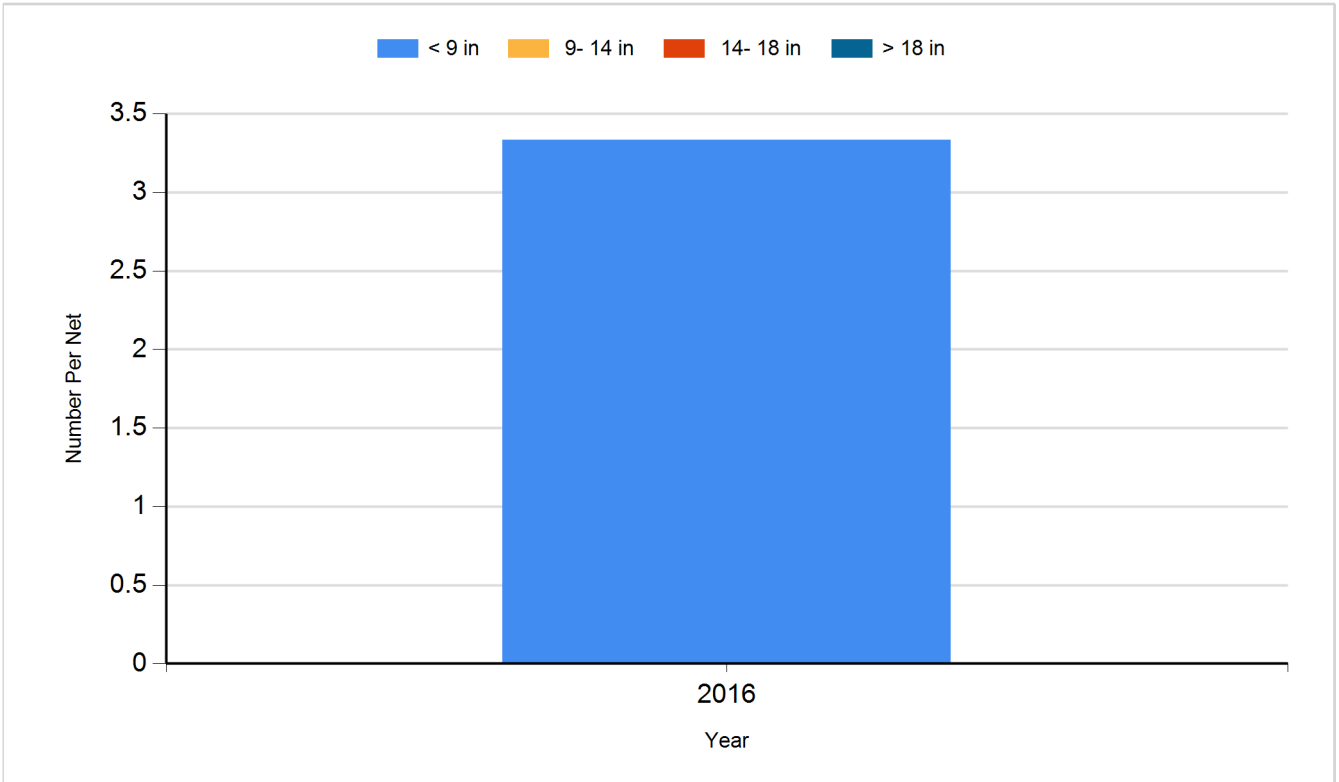
Species: Northern Pike
Gear: std exp gill net



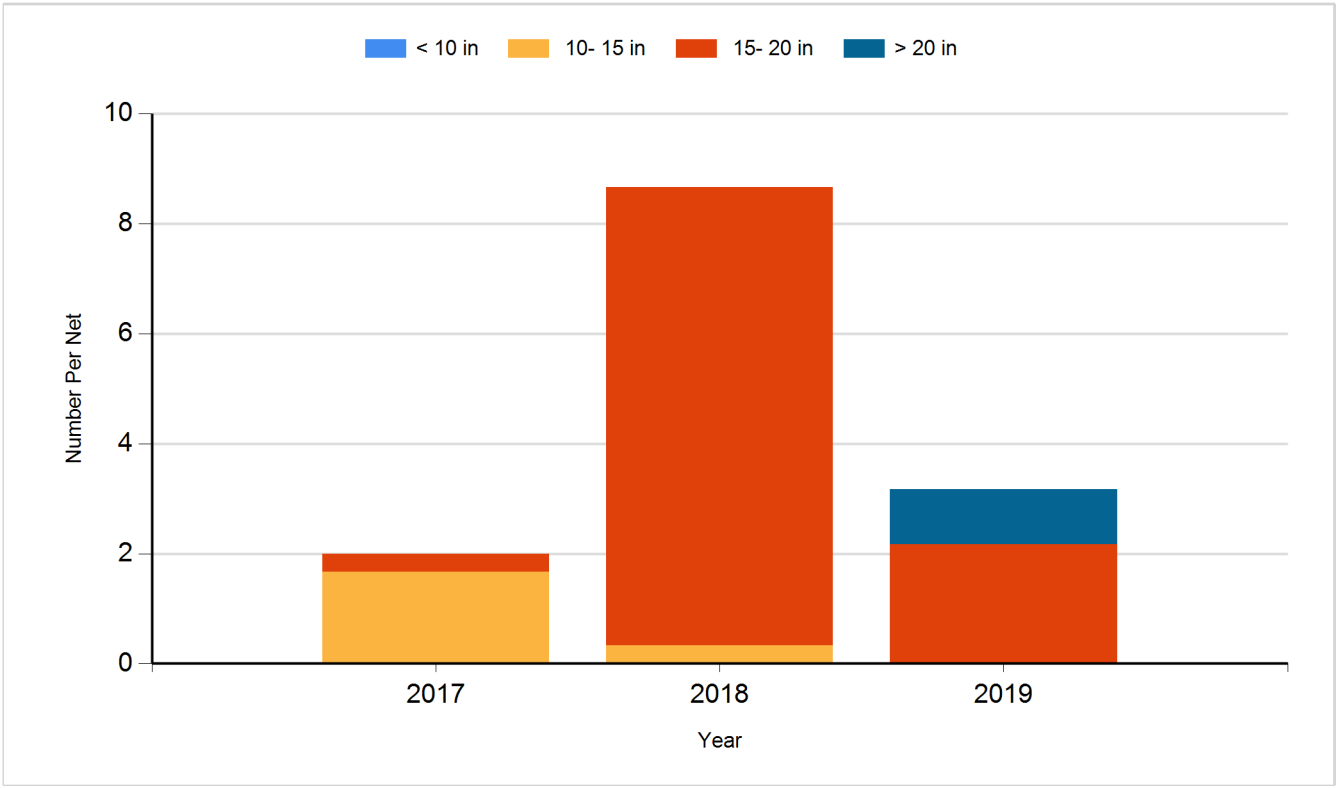
Species: Saugeye
Gear: AFS std gill net



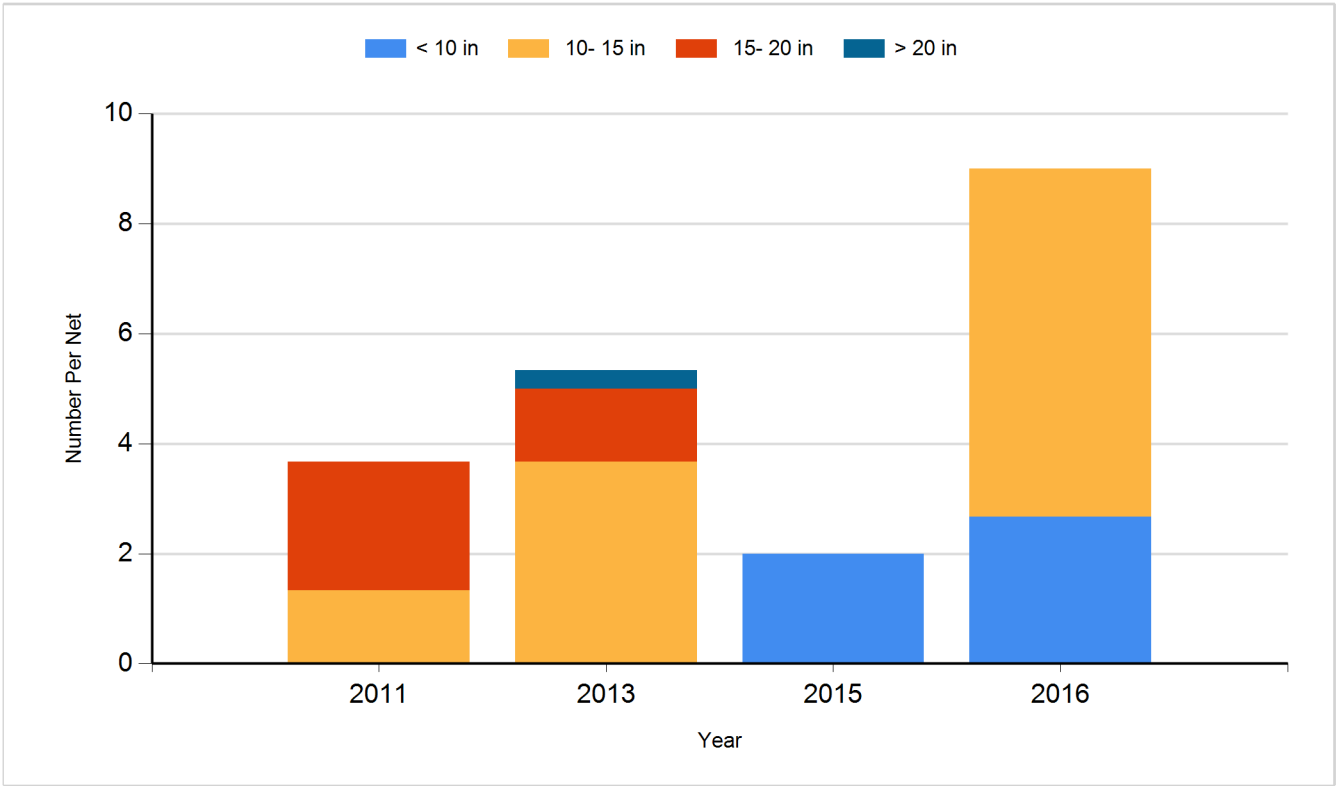
Species: Saugeye
Gear: std exp gill net



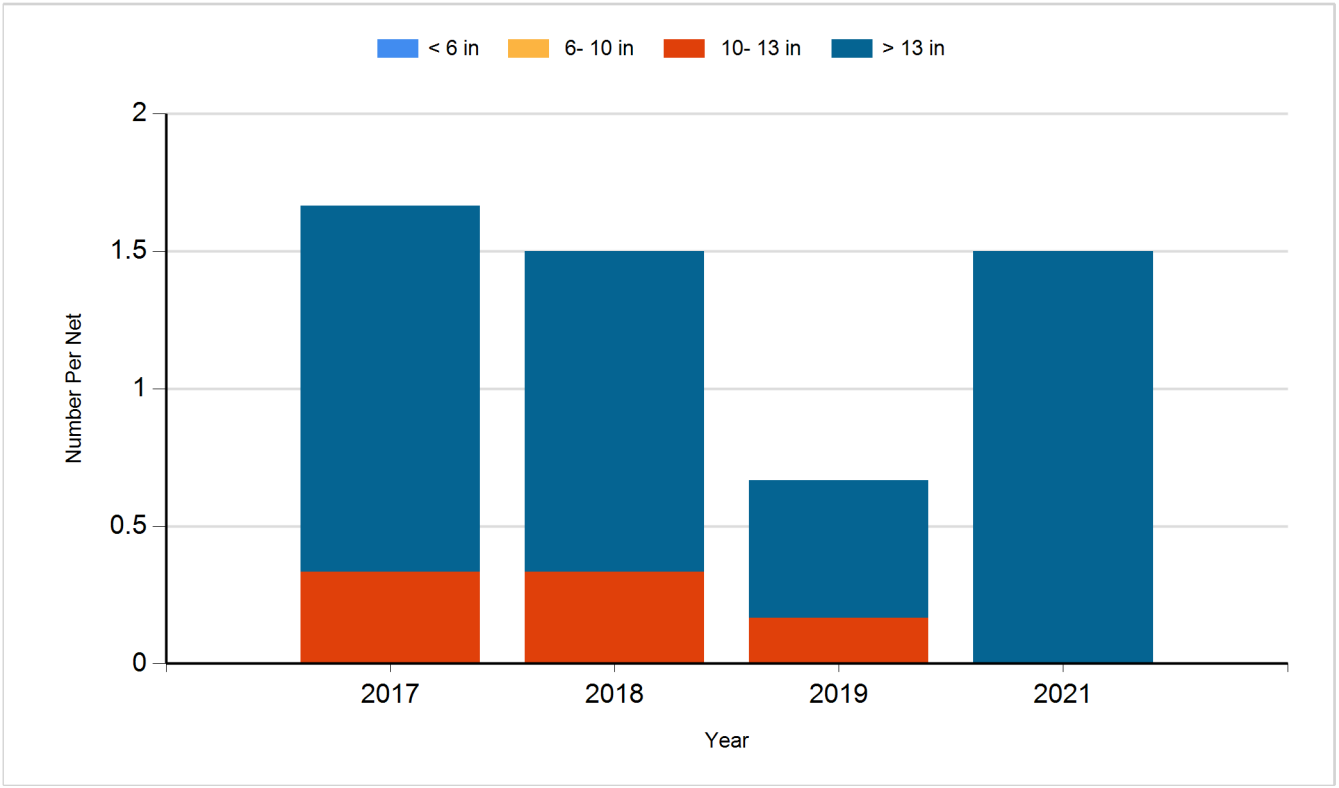
Species: Walleye
Gear: AFS std gill net



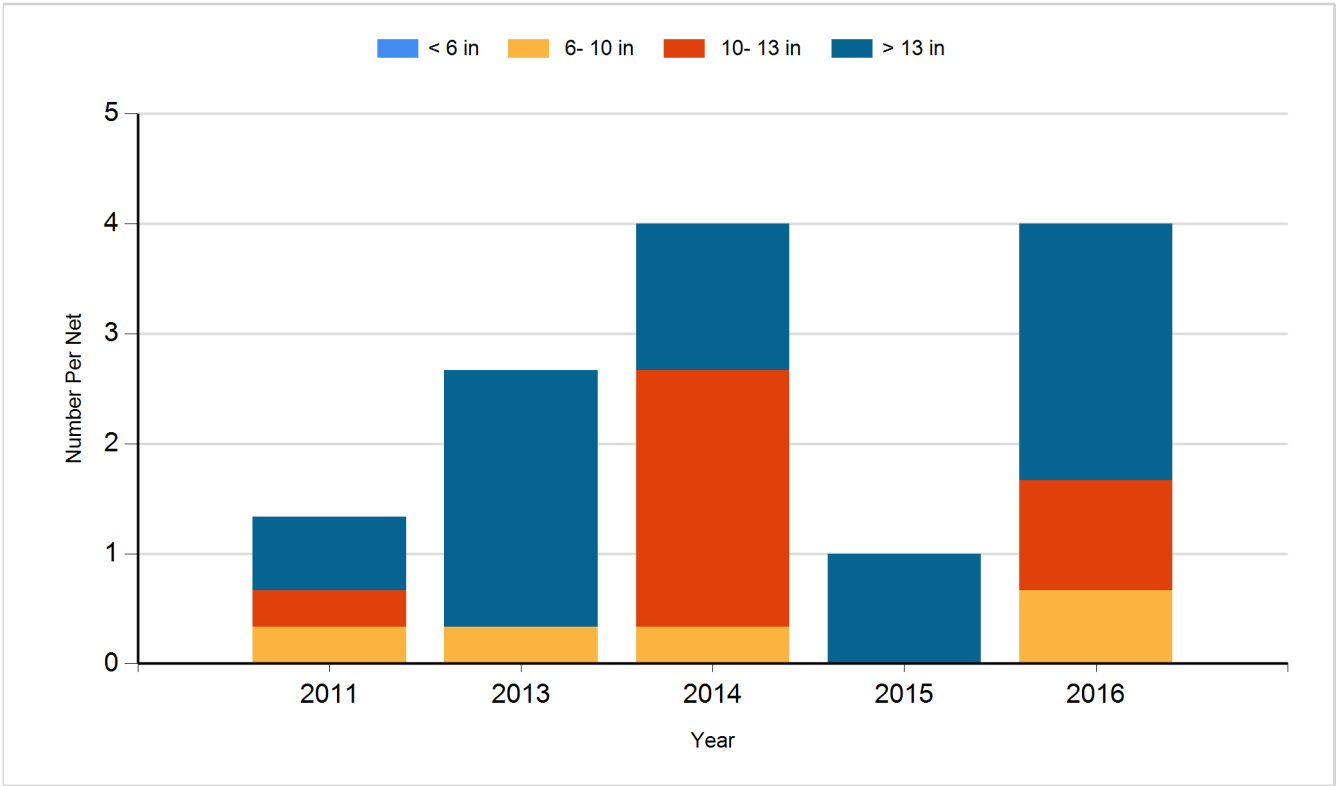
Species: Walleye
Gear: std exp gill net



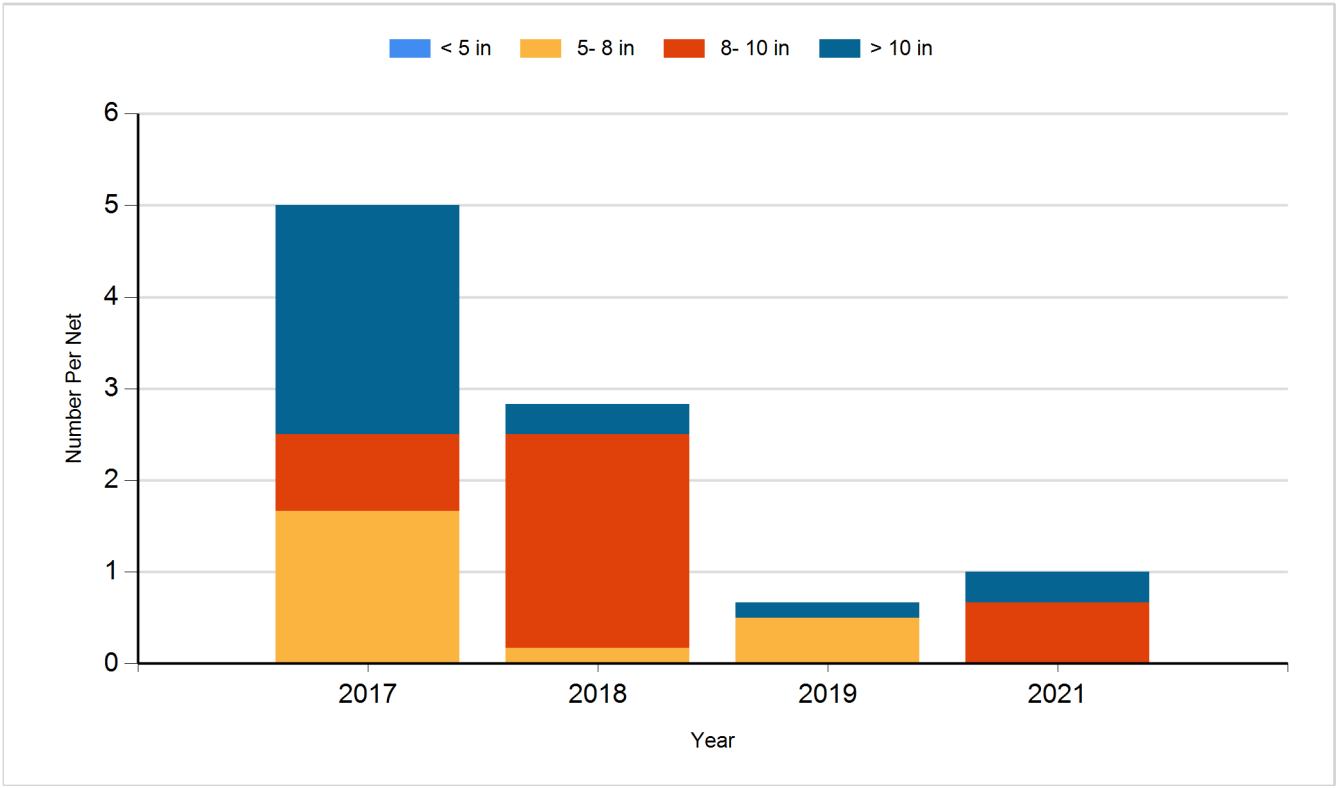
Species: White Sucker
Gear: AFS std gill net



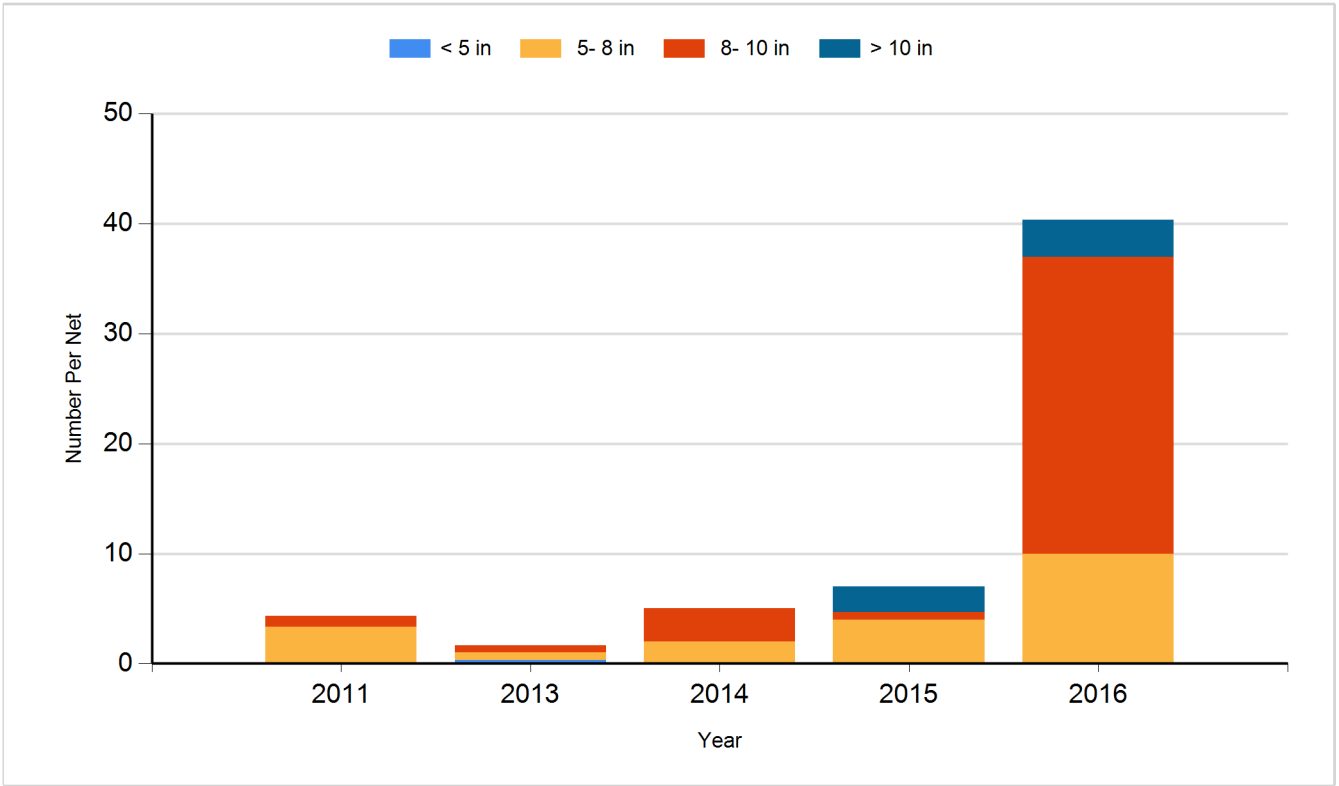
Species: White Sucker
Gear: std exp gill net



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	32,640
2011	Walleye	Large Fingerling	172
2011	Yellow Perch	Adult	2,280
2011	Yellow Perch	Small Fingerling	145,920
2012	Walleye	Juvenile	1,350
2014	Walleye	Fry	300,000
2015	Walleye	Small Fingerling	20,480
2016	Saugeye	Small Fingerling	31,030
2018	Saugeye	Small Fingerling	20,550
2019	Saugeye	Small Fingerling	21,120
2021	Saugeye	Fry	400,000
2021	Saugeye	Juvenile	25,830