SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Campbell, Brookings County
MBS-Lake-234-000
2022

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	Jul 12, 2022	6 net-nights

Common Fish Species Present

Yellow Perch

Walleye

Channel Catfish

White Sucker

Saugeye

Black Bullhead

Common Carp

Bigmouth Buffalo

Northern Pike

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	6	0.7	0.7	25		0			
	Black Bullhead	16	2.7	1.5	94		0			
	Channel Catfish	41	6.8	3.1	88		5		92	2
	Common Carp	11	1.8	1.0	100		55			
	Northern Pike	3	0.5	0.5	67		0		78	6
	Saugeye	16	2.7	0.7	69		19		91	2
	White Sucker	30	5.0	2.2	100		97			
	Yellow Perch	11	1.8	0.8	100		82		99	4

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	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Avg
AFS std gill net	Bigmouth Buffalo					1.5	1.3	1.2		0.3	0.7	1.00
	Black Bullhead					10.8	17.8	3.2		3.2	2.7	7.54
	Black Crappie					0.0	0.2	0.3		0.3	0.0	0.16
	Channel Catfish					2.3	6.0	4.0		24.5	6.8	8.72
	Common Carp					4.3	1.2	1.5		0.8	1.8	1.92
	Northern Pike					0.8	0.3	1.0		0.7	0.5	0.66
	Saugeye					1.3	3.7	2.3		0.7	2.7	2.14
	Shorthead Redhorse					0.2	0.2	1.7		0.2	0.0	0.46
	Walleye					10.8	3.0	0.2		0.0	0.0	2.80
	White Bass					1.5	1.7	1.2		0.5	0.0	0.98
	White Sucker					9.5	8.2	13.5		10.2	5.0	9.28
	Yellow Perch					3.3	1.5	3.2		0.7	1.8	2.10
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
	White Bass	0.0	0.0	2.7	2.0							1.18

		CPUE										
Gear	Species	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Avg
std exp gill net	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.

			Year									
Gear	Species	Index	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
AFS std gill net	Bigmouth Buffalo	PSD					0	38	71		50	25
		PSD-P					0	13	14		0	0
	Black Bullhead	PSD					29	95	89		100	94
		PSD-P					3	3	5		5	0
	Channel Catfish	PSD					50	100	92		75	88
		PSD-P					14	17	8		3	5
		Wr					98	93	105		92	92
	Common Carp	PSD					85	100	89		100	100
		PSD-P					58	57	56		0	55
	Northern Pike	PSD					80	50	83		75	67
		PSD-P					40	50	0		25	0
		Wr					85	121	85		72	78
	Saugeye	PSD					0	9	50		25	69
		PSD-P					0	0	0		0	19
		Wr					88	88	90		79	91
	Walleye	PSD					20	33	100			
		PSD-P					0	0	100			
		Wr					82	83	91			
	White Sucker	PSD					100	100	100		100	100
		PSD-P					98	100	99		100	97
	Yellow Perch	PSD					95	78	79		75	100
		PSD-P					80	44	26		50	82
		Wr					91	100	113		113	99
frame net (std 3/4 in)	Bigmouth Buffalo	PSD	100									
		PSD-P	50									
		Wr	84									
	Black Bullhead	PSD	89									
		PSD-P	0									
		Wr	83									
	Channel Catfish	PSD	92									
		PSD-P	3									
		Wr	86									
	Common Carp	PSD	99									

			Year									
Gear	Species	Index	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
frame net (std 3/4 in)	Common Carp	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	Bigmouth Buffalo	PSD		0	0							
		PSD-P		0	0							
	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 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+
2022	15	266 (4)		424 (8)	475 (1)	560 (2)					
2021	4		331 (3)	322 (1)							
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

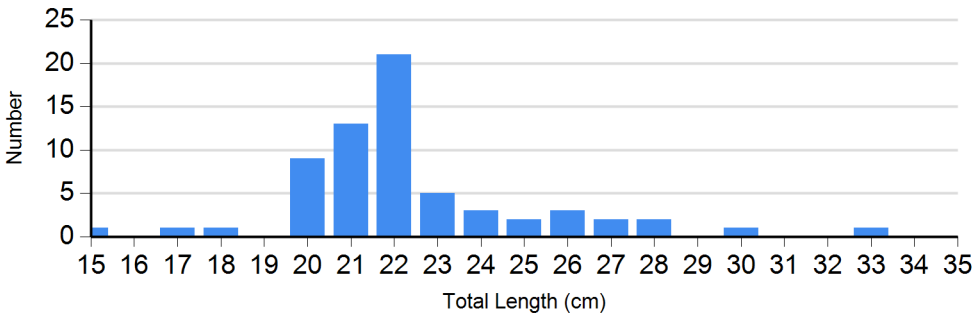
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Channel Catfish Gill Net	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	37	93 (1.2)	106	90 (0.9)	4	99 (1.1)	0	
	2022	5	95 (4.0)	34	91 (1.6)	2	94 (3.8)	0	
Northern Pike Gill Net	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	
	2022	1	82	2	76 (6.5)	0		0	
Saugeye Gill Net	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	
	2022	5	98 (1.0)	8	88 (1.7)	2	88 (2.6)	1	83
Walleye Gill Net	2018	12	85 (1.6)	6	81 (1.3)	0		0	
	2019	0		0		1	91	0	
Yellow Perch Gill Net	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	
	2022	0		2	105 (1.6)	9	97 (4.0)	0	

Length Frequency Distribution

Length frequency histogram of species sampled by year.

Species: Black Bullhead
Gear: AFS std gill net



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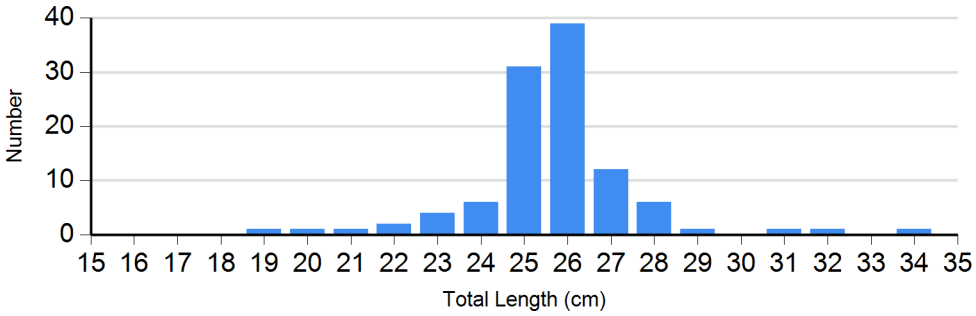

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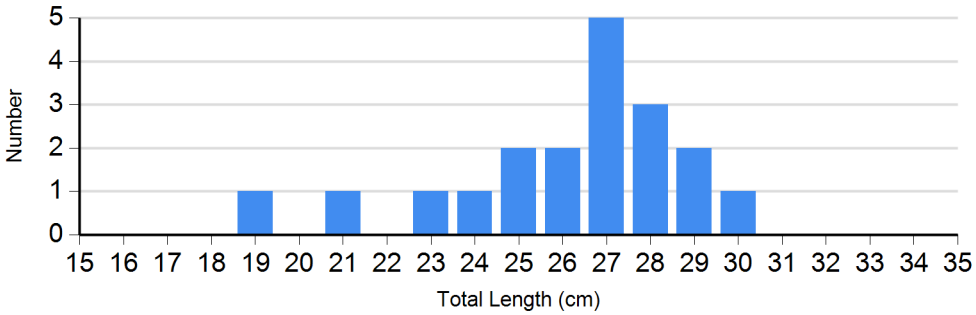

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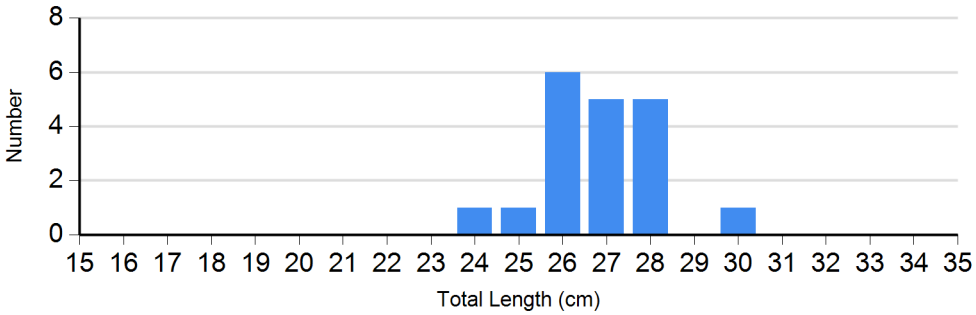

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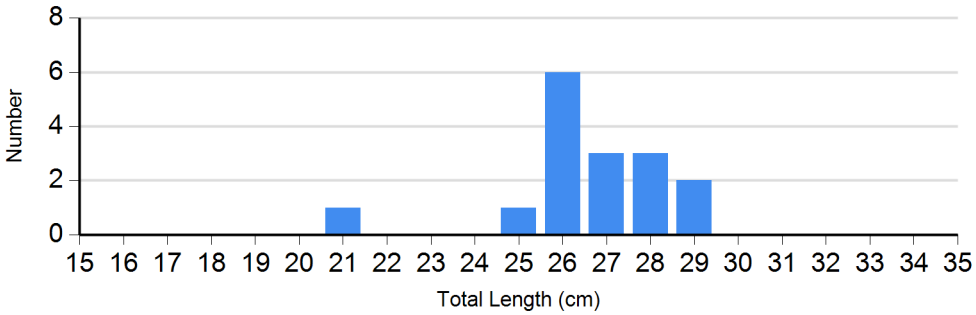
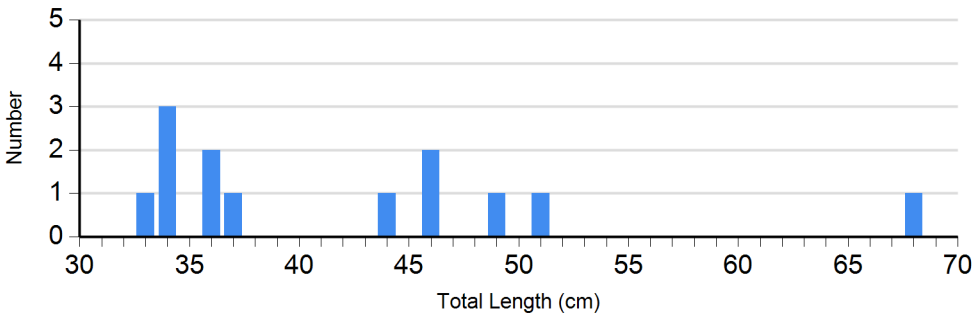


2022

Species: Channel Catfish
Gear: AFS std gill net



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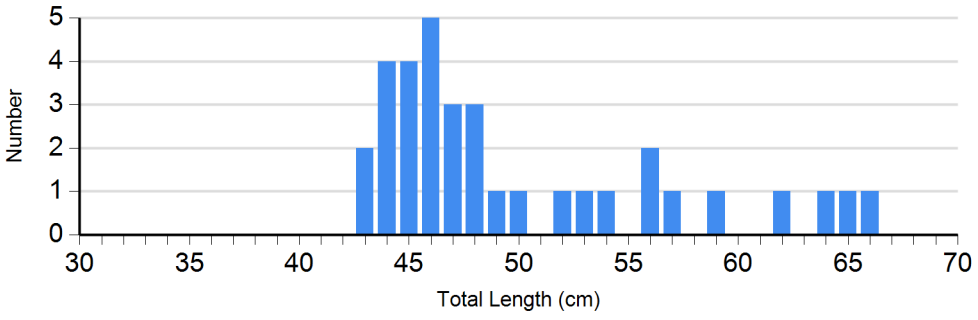

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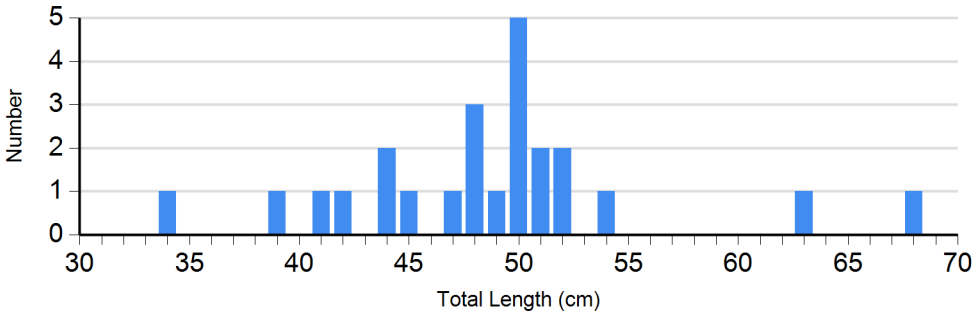

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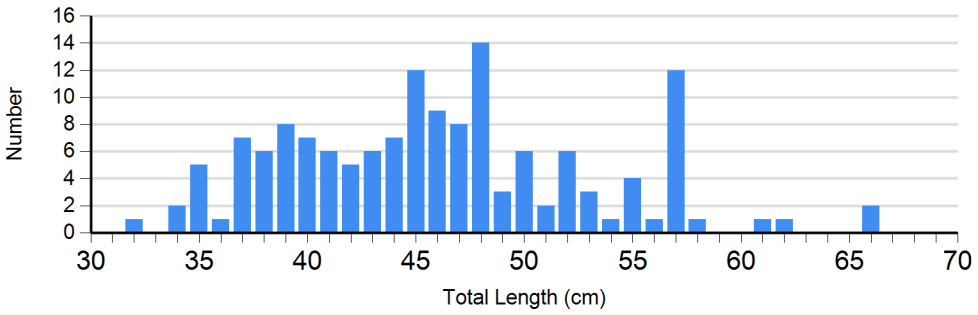

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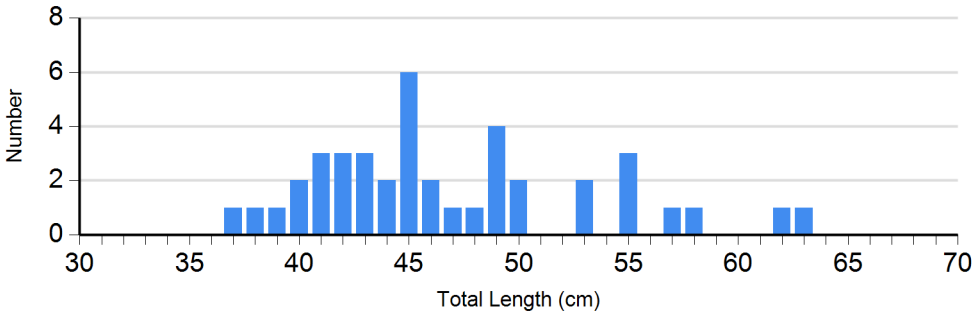
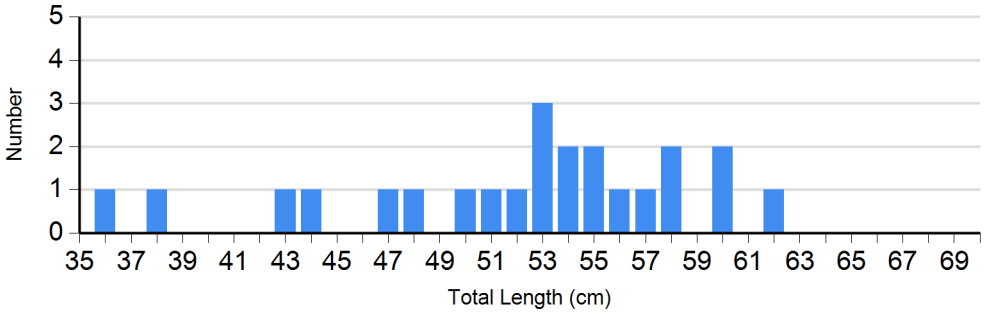


2022

Species: Common Carp
Gear: AFS std gill net



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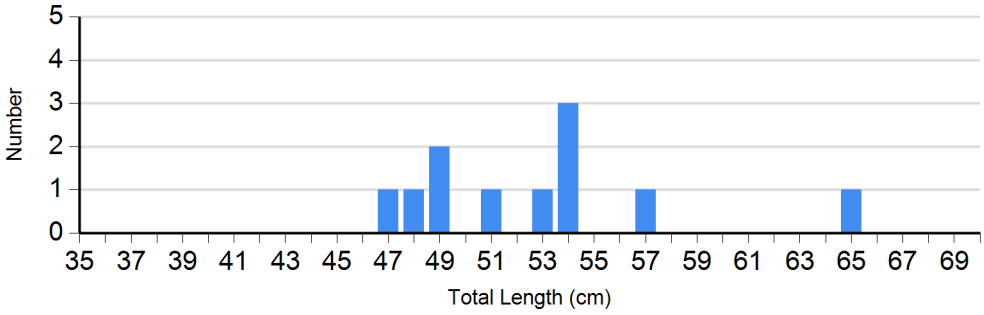
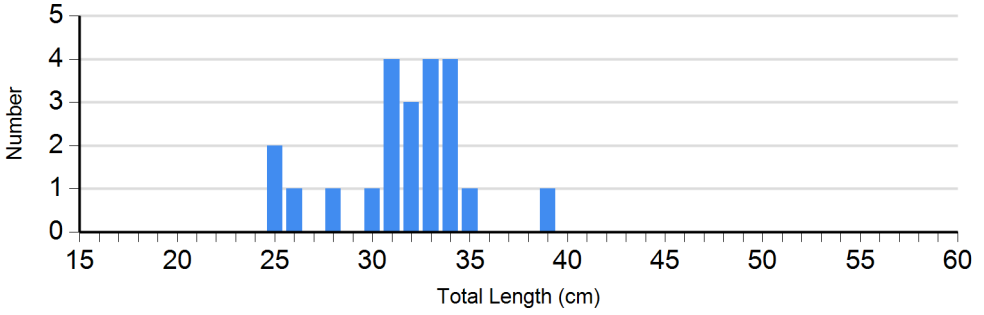


2022

Species: Saugeye
Gear: AFS std gill net



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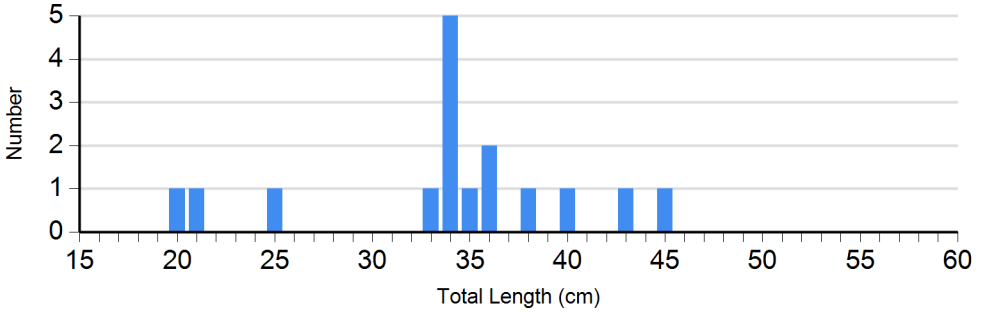

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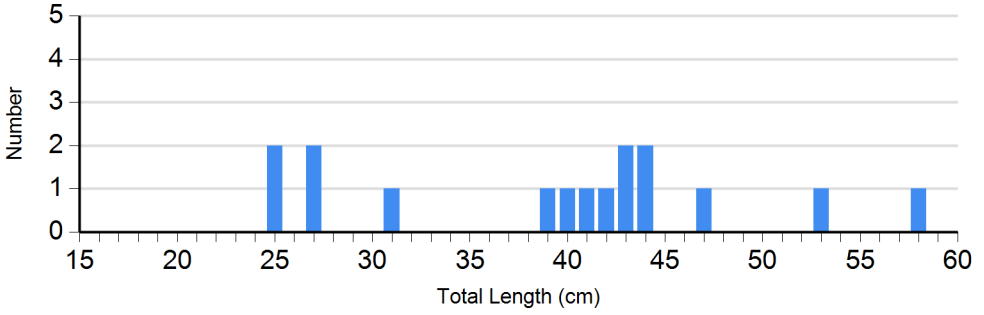
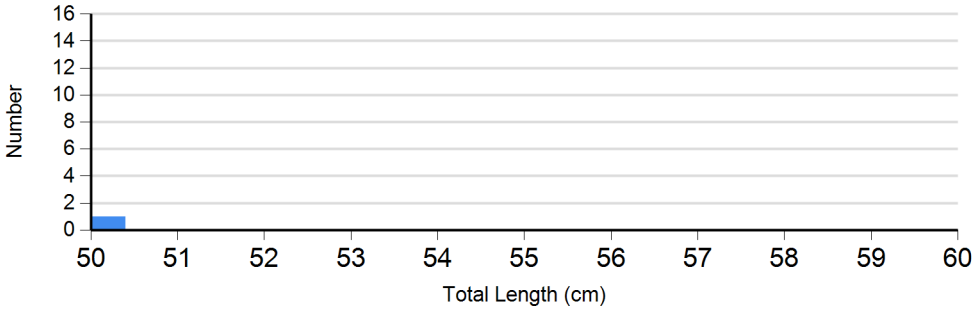


2022

Species: Walleye
Gear: AFS std gill net



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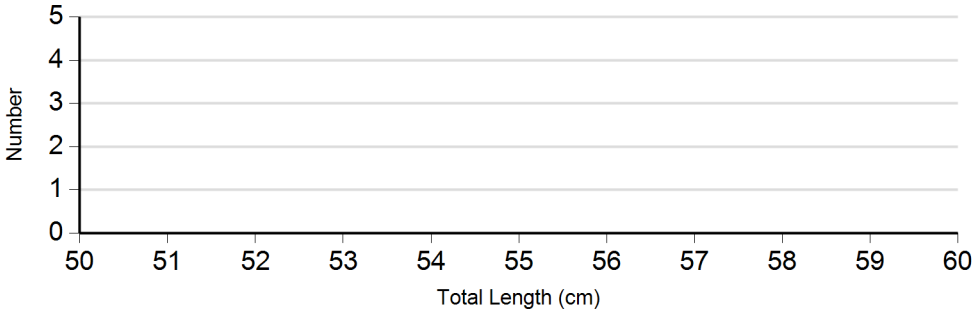
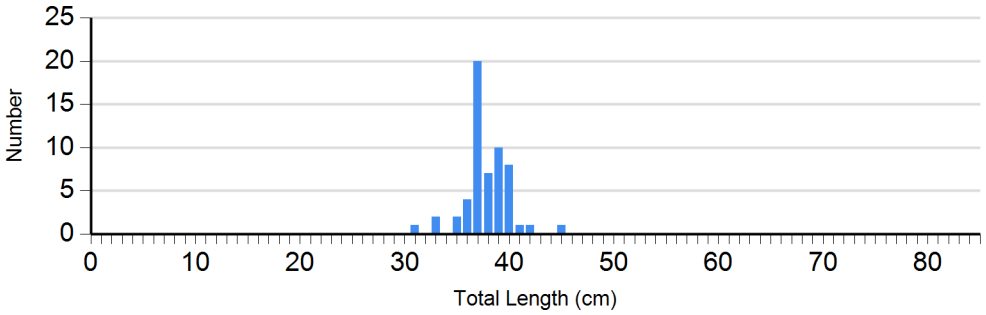


2018

Species: White Sucker
Gear: AFS std gill net



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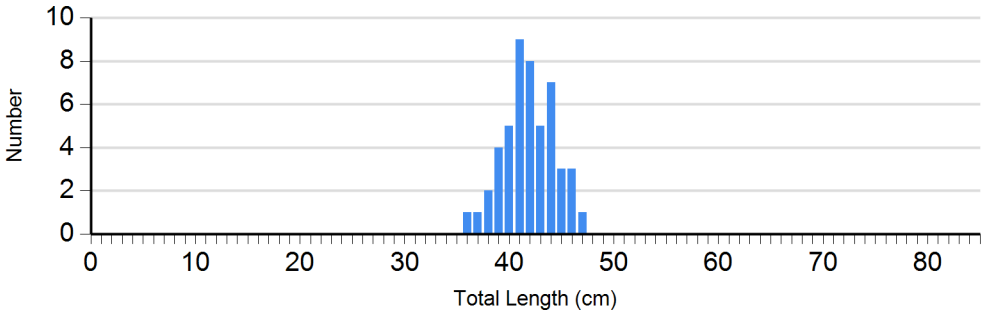

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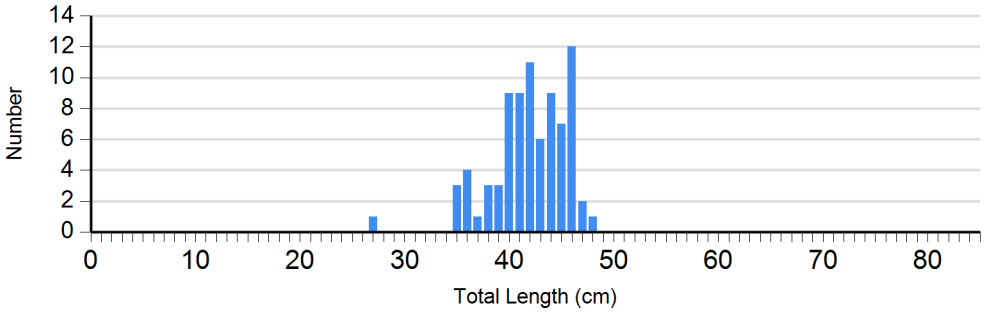

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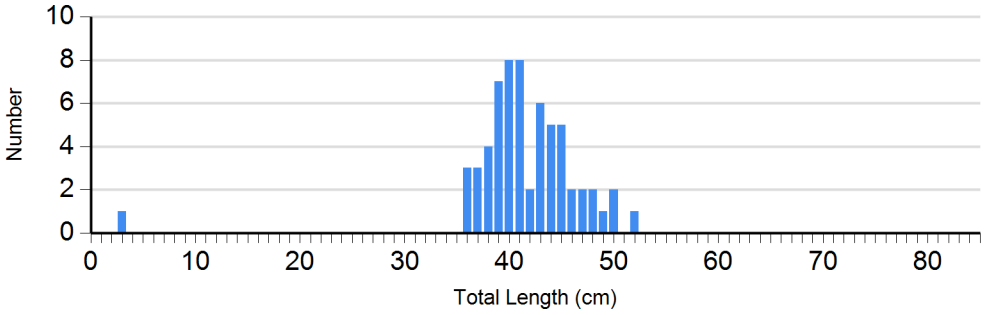
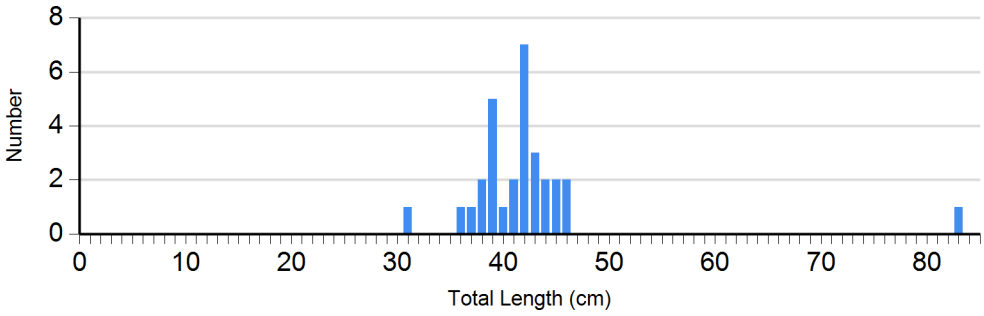
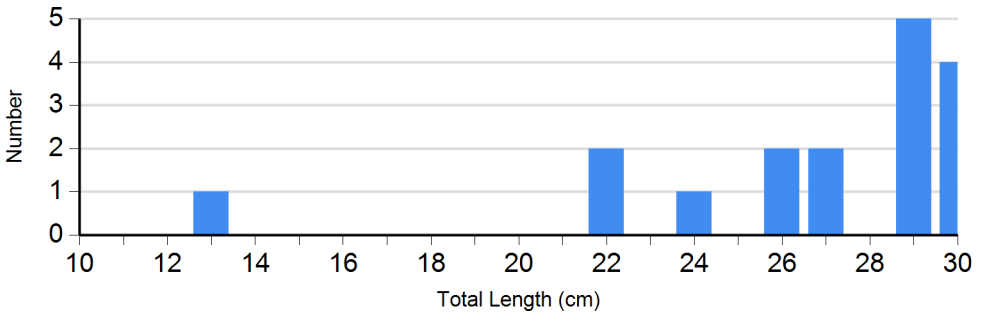


2021

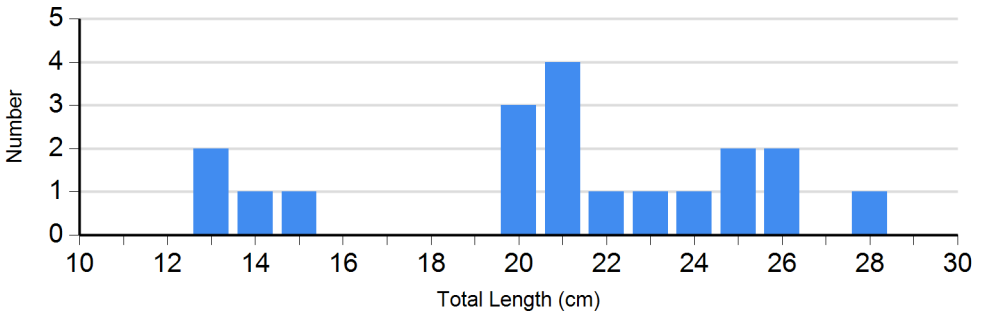


2022

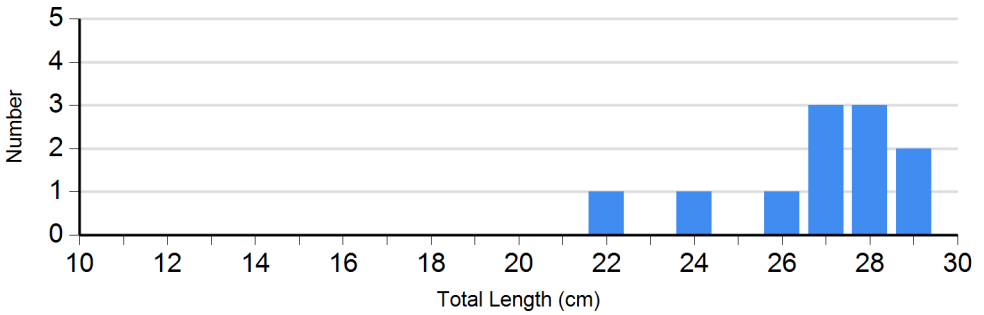
Species: Yellow Perch
Gear: AFS std gill net



2017



2019

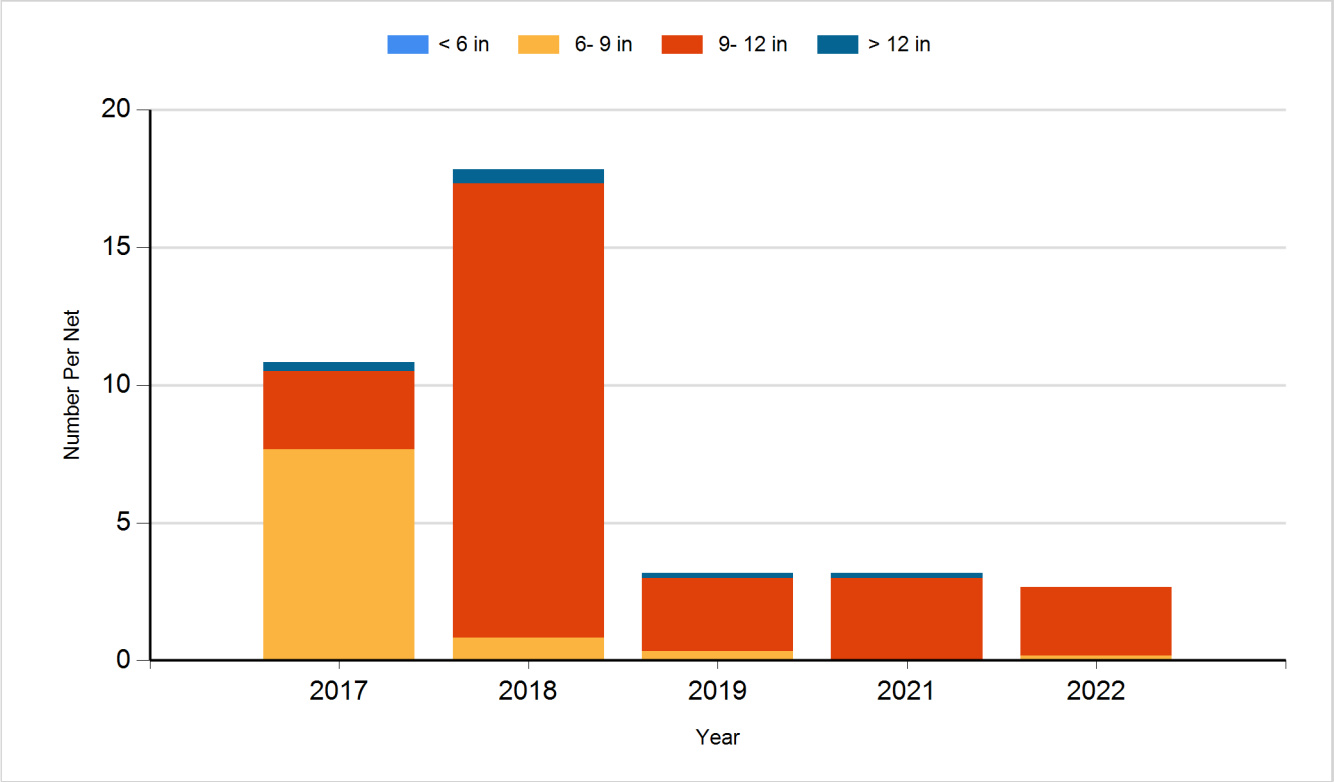


2022

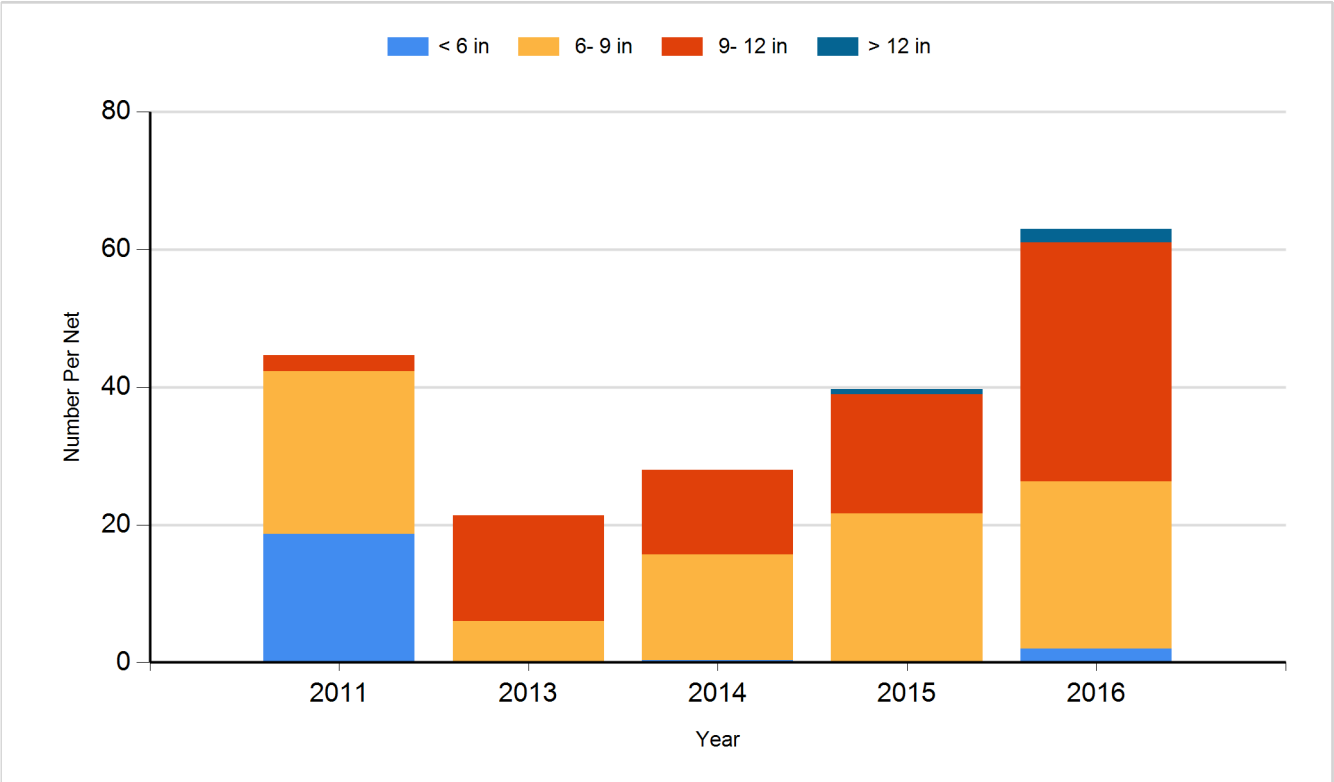
Historic Fish Sizes and Relative Abundance

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

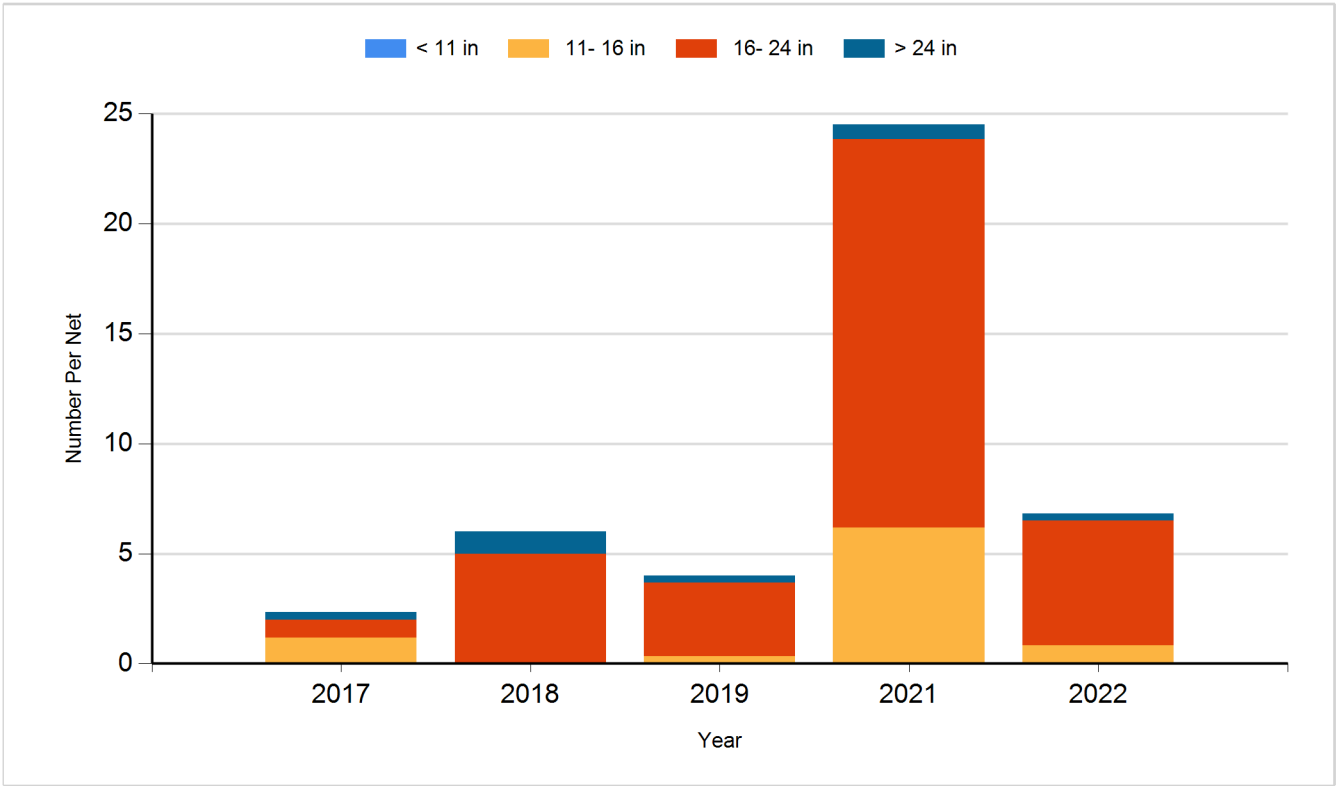
Species: Black Bullhead
Gear: AFS std gill net



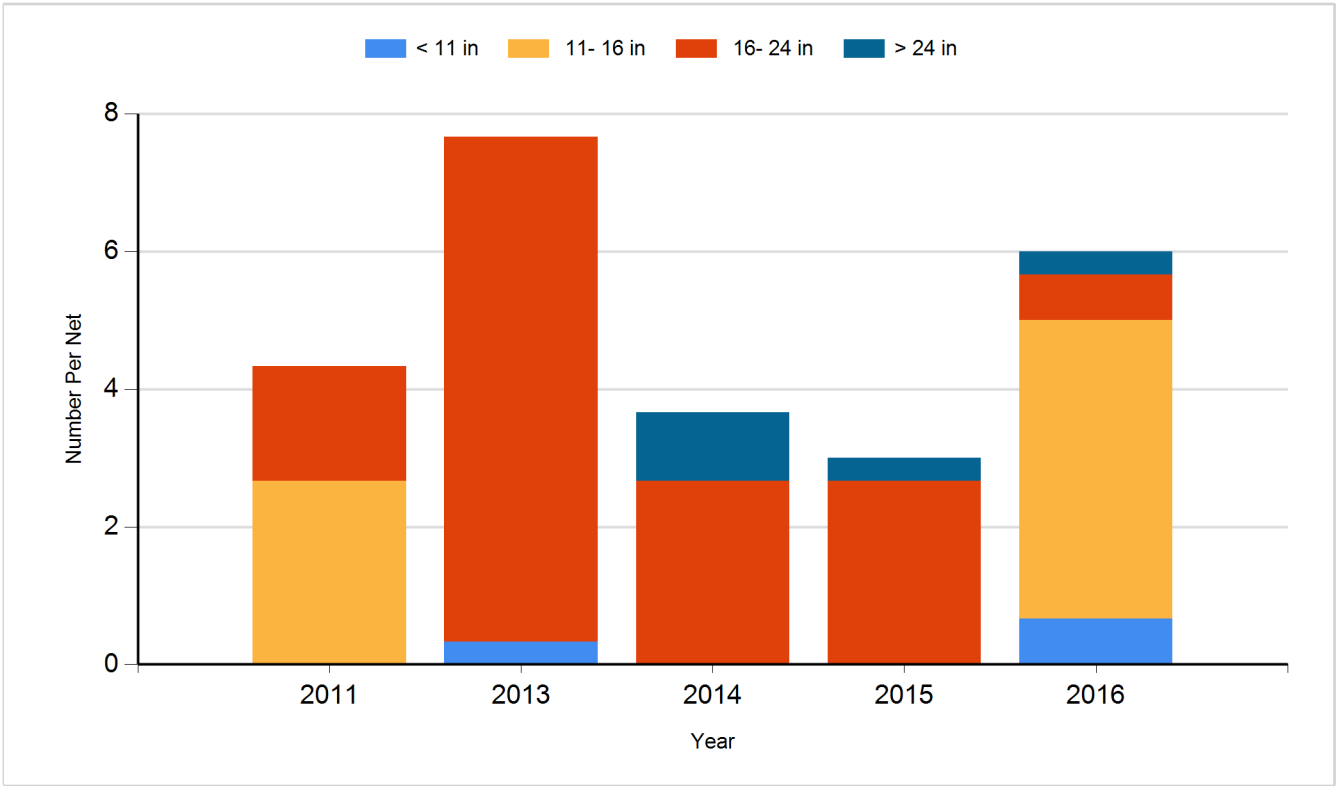
Species: Black Bullhead
Gear: std exp gill net



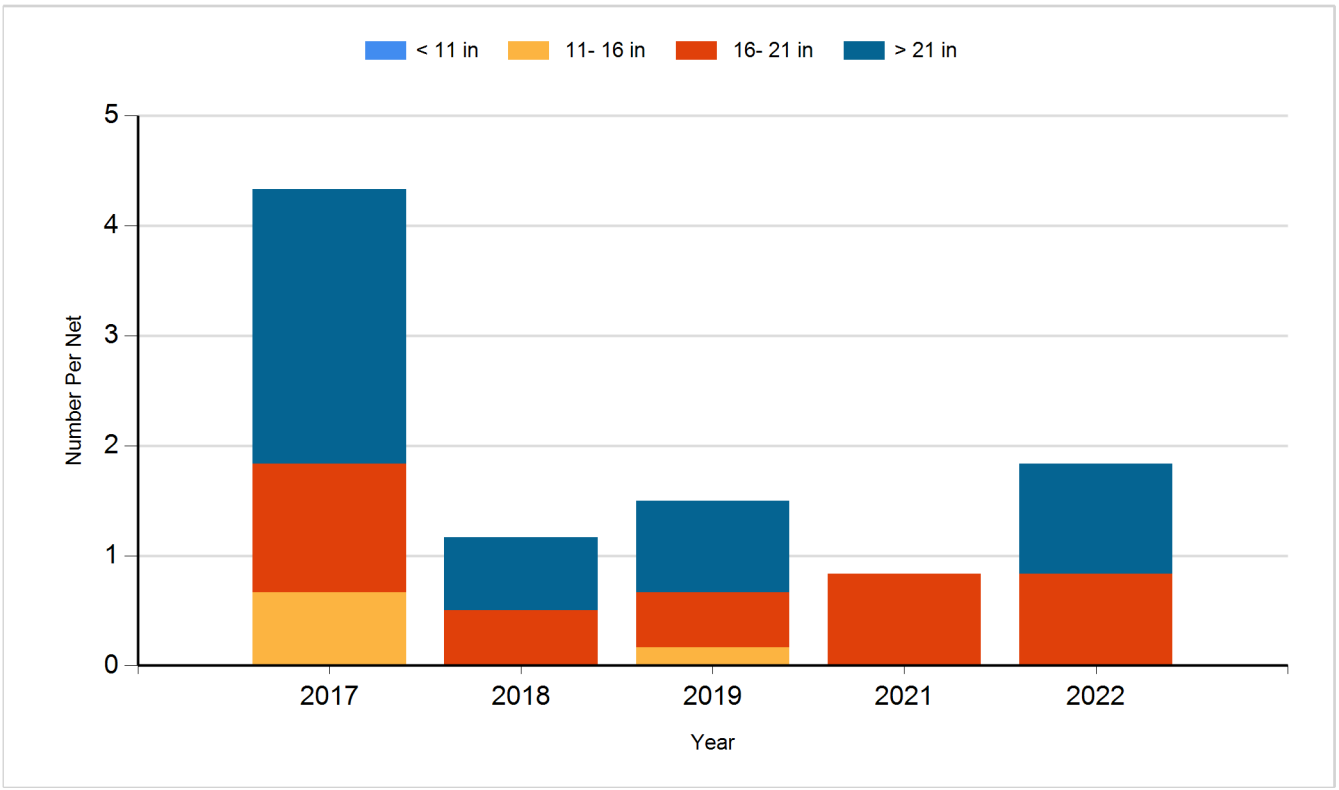
Species: Channel Catfish
Gear: AFS std gill net



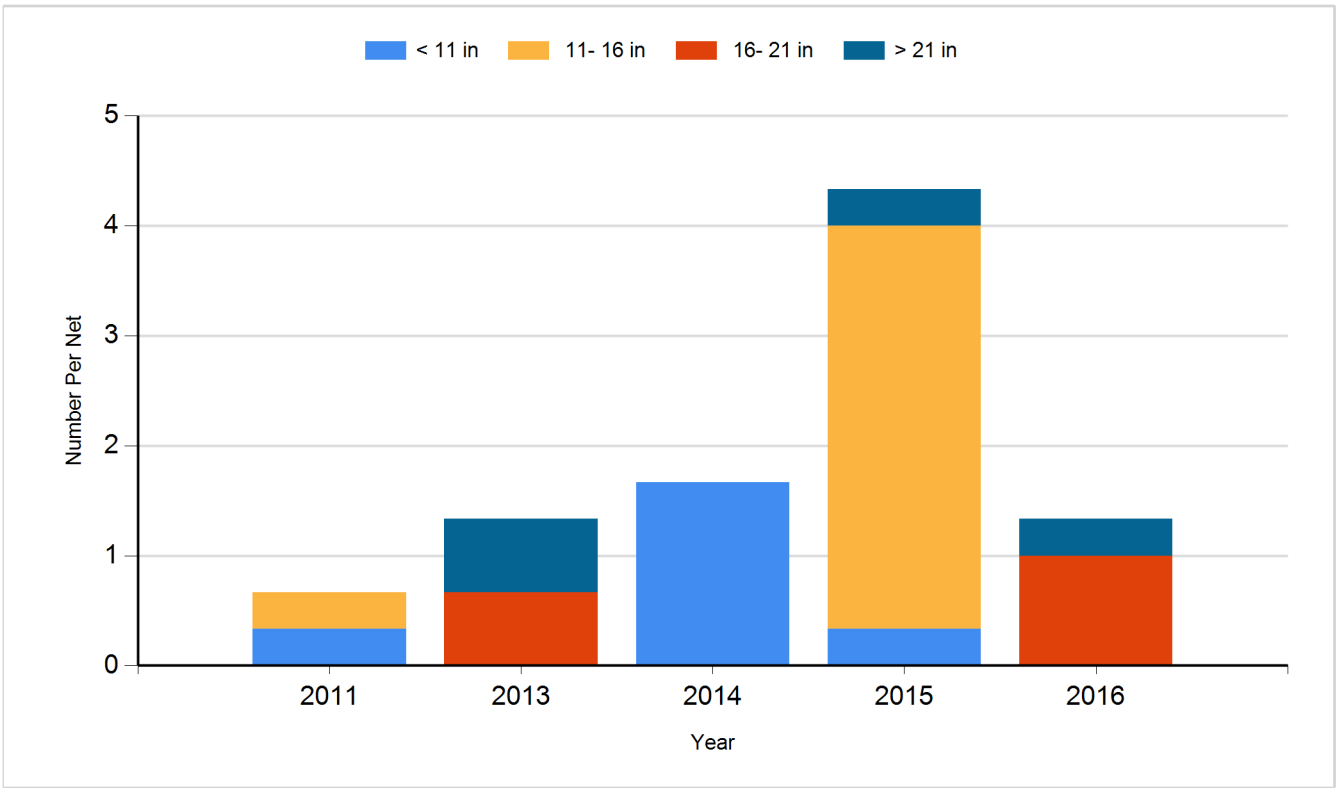
Species: Channel Catfish
Gear: std exp gill net



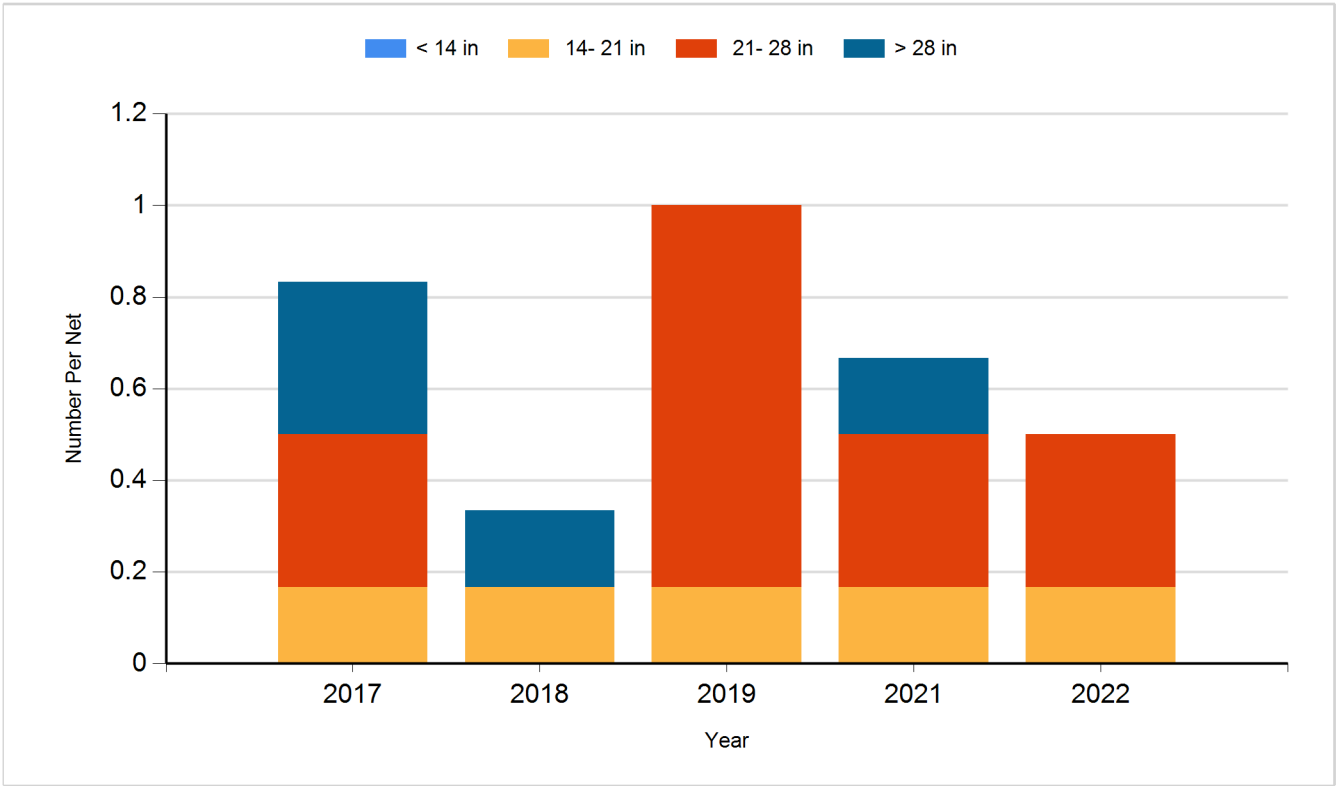
Species: Common Carp
Gear: AFS std gill net



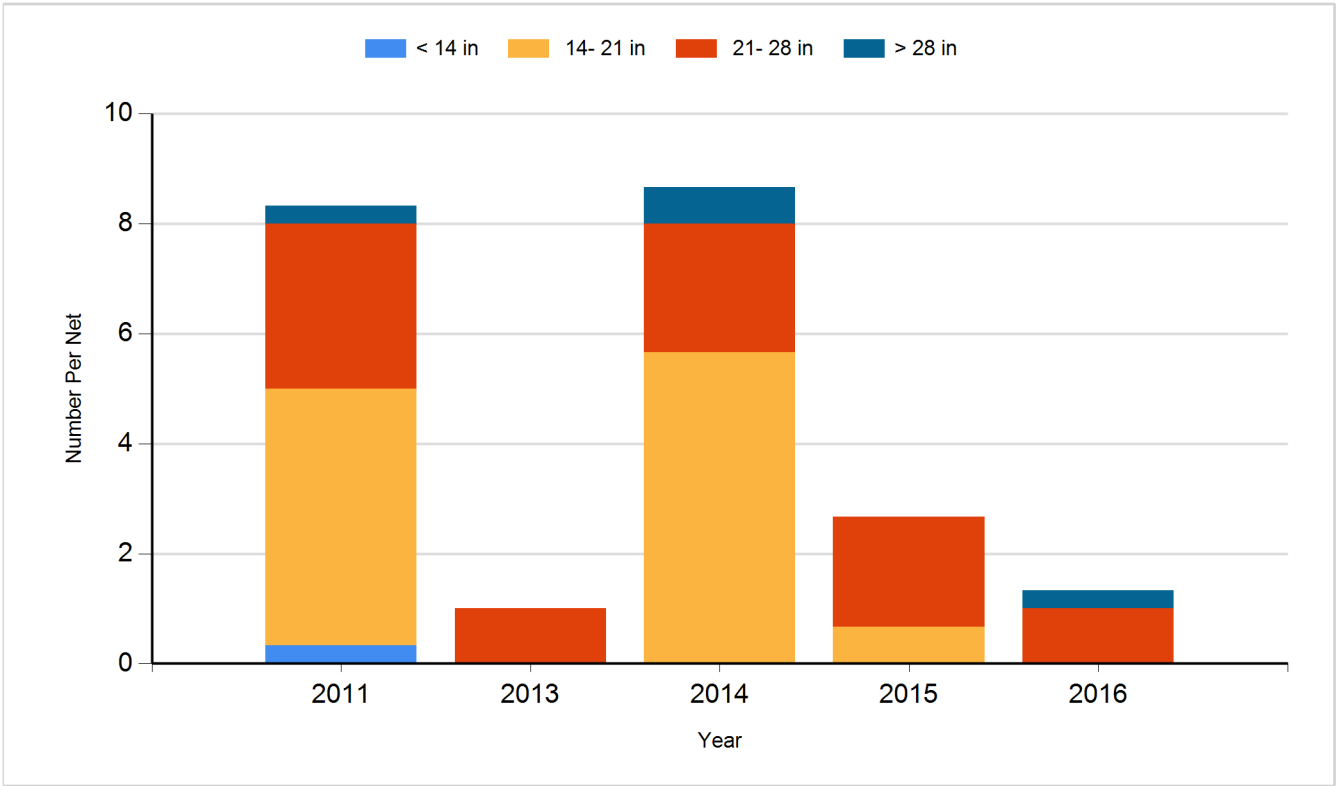
Species: Common Carp
Gear: std exp gill net



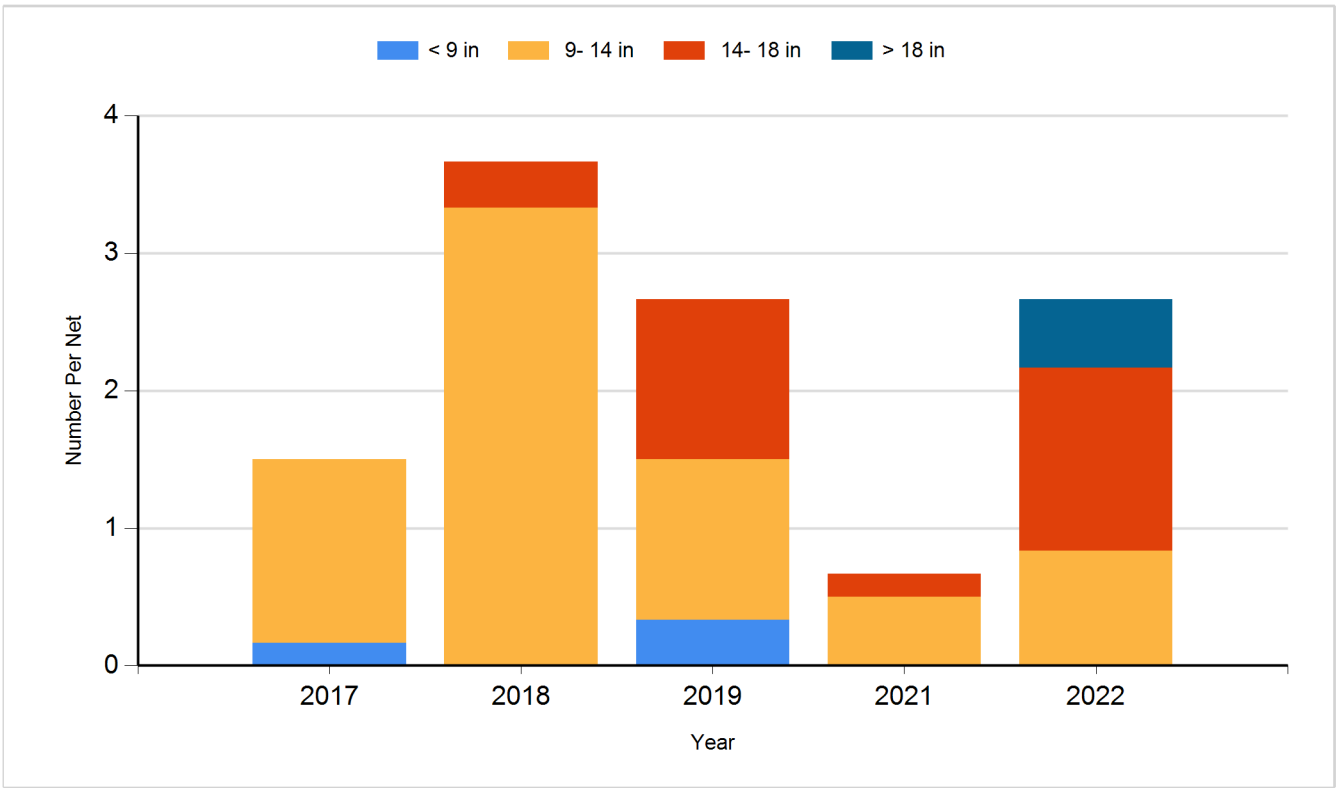
Species: Northern Pike
Gear: AFS std gill net



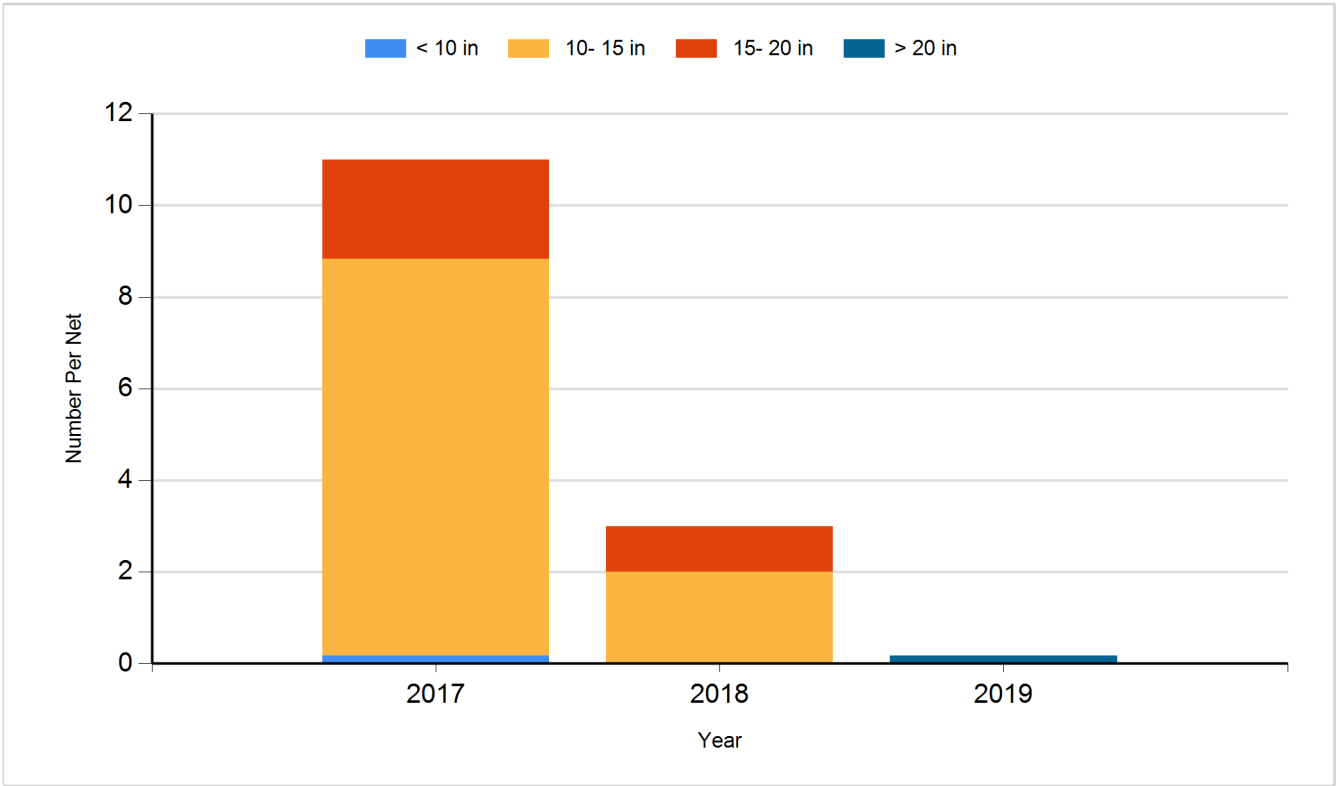
Species: Northern Pike
Gear: std exp gill net



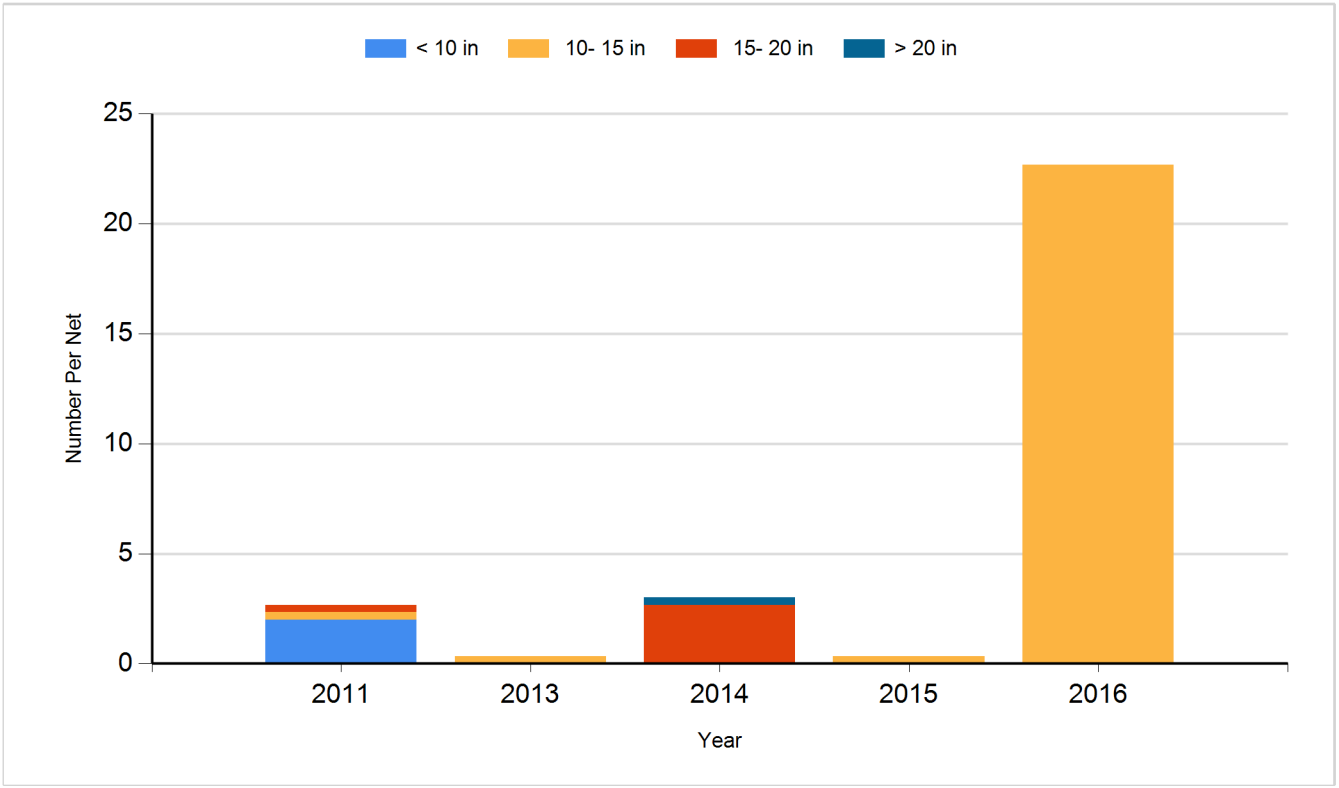
Species: Saugeye
Gear: AFS std gill net



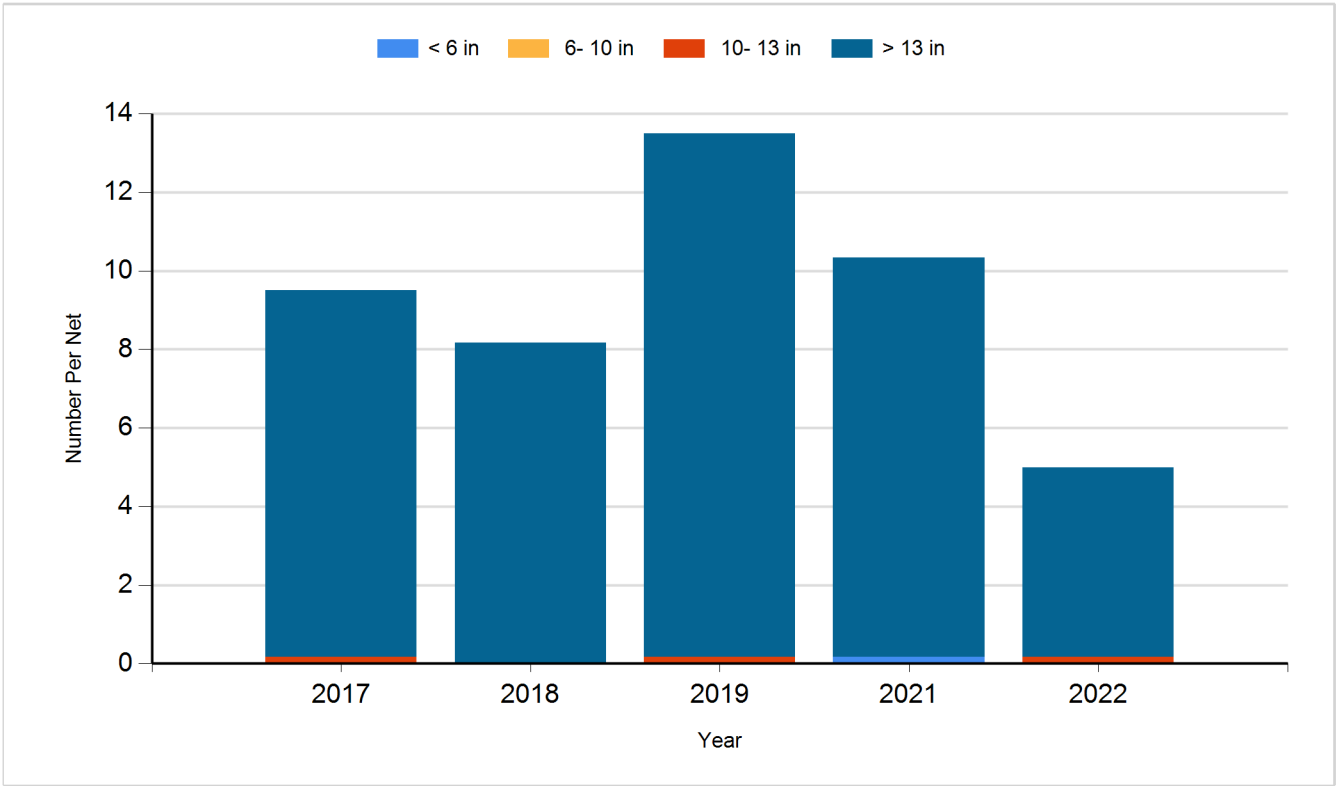
Species: Walleye
Gear: AFS std gill net



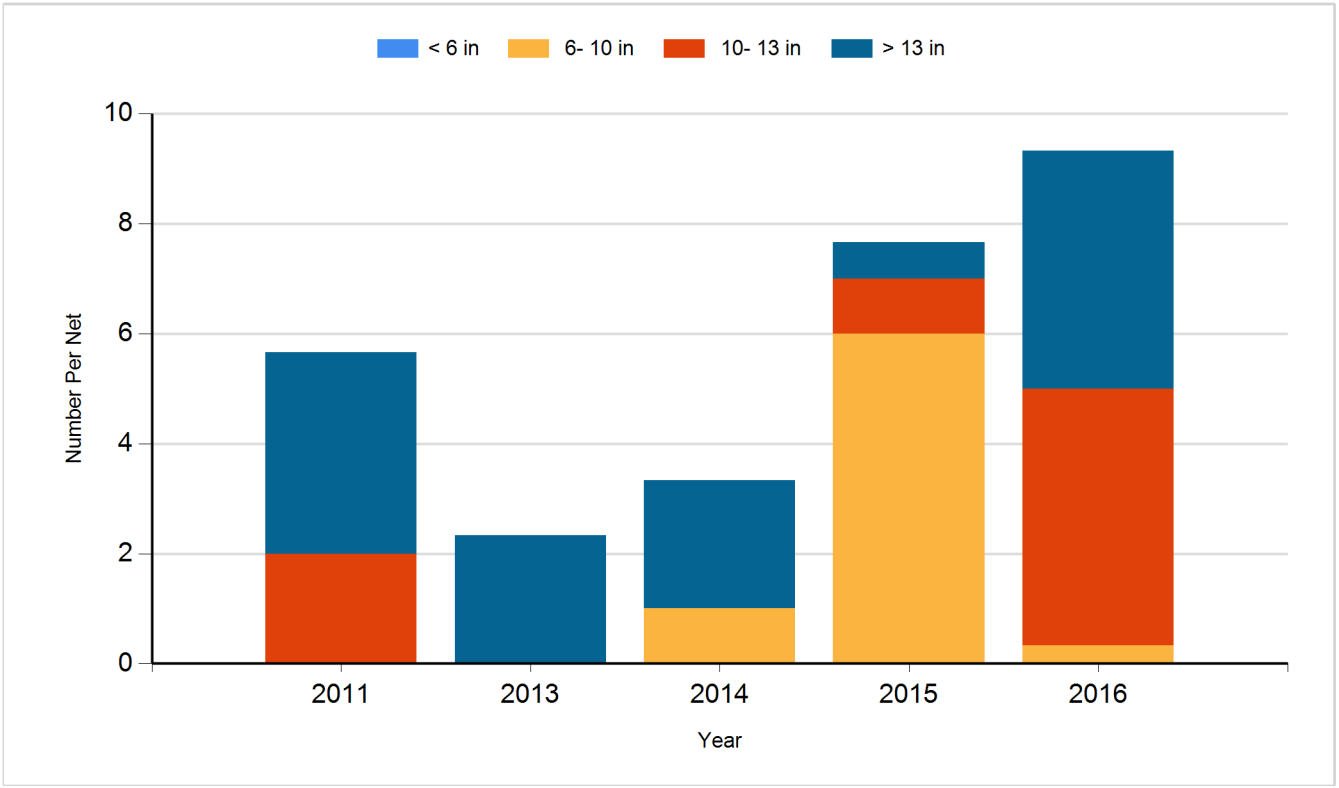
Species: Walleye
Gear: std exp gill net



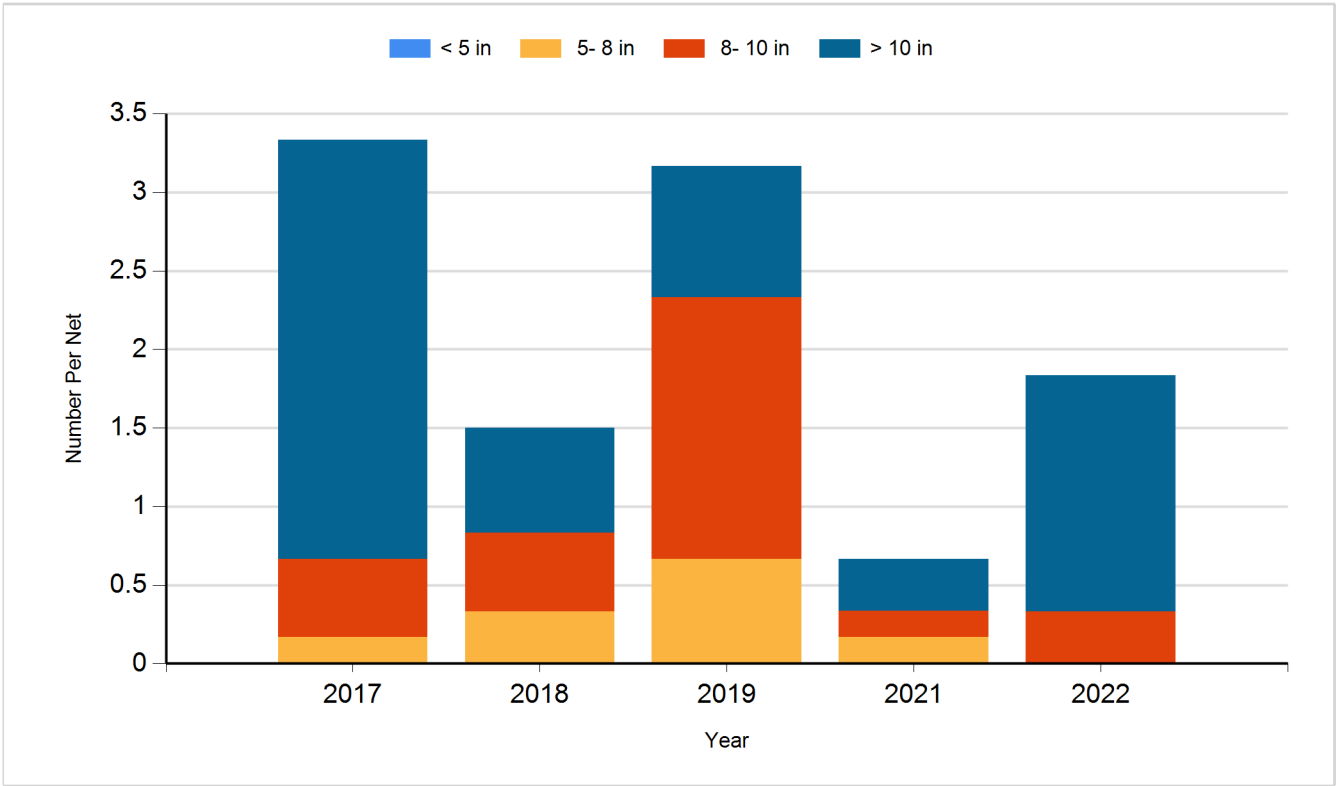
Species: White Sucker
Gear: AFS std gill net



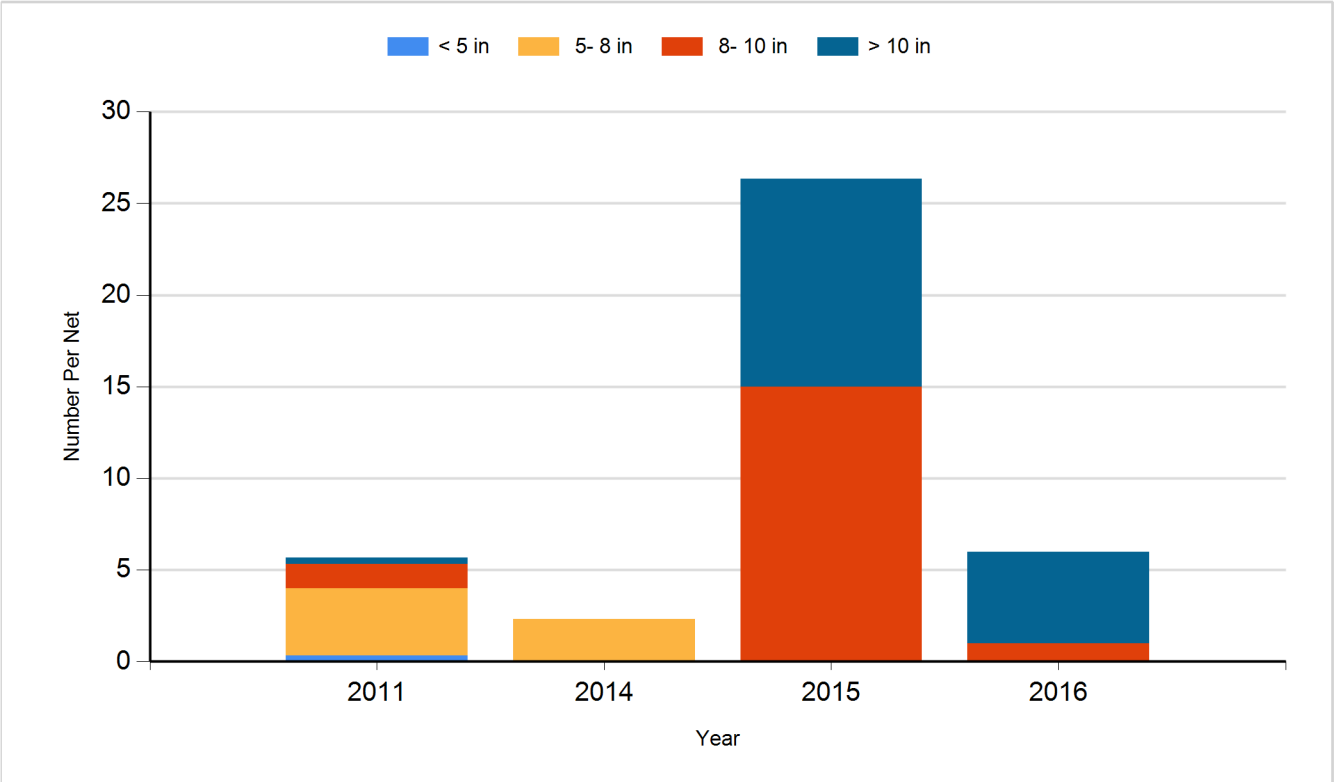
Species: White Sucker
Gear: std exp gill net



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
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