East Vermillion Lake

East Vermillion Lake, located five miles east and one mile south of Canistota, is managed as a walleye and crappie fishery; other fish species (e.g., bluegill, largemouth bass, freshwater drum, northern pike, channel catfish, saugeye, white bass, and white crappie) provide additional angling opportunities.

- **Walleye**. Gill netting efforts produced 0.2 walleye per net in 2024. Relative abundance was lower than the previous sample year (2022) and long term mean (CPUE = 1.0 and 0.6 fish per net, respectively). Sampled fish ranged from 11.2 to 19.3 inches long with 50% measuring greater than 15 inches. Fisheries staff began stocking saugeye instead of walleye recently in an attempt to increase catch rates. Research has shown that these walleye/sauger hybrids can be more productive in shallow, more-turbid lakes.

- **White Crappie**. White crappie abundance increased dramatically in 2024 resulting in the highest catch rate in the state (CPUE = 55.6 fish per frame net). Relative abundance was higher than the previous sample year (2022) and long term mean (CPUE = 7.9 and 11.2 fish per net, respectively). Sampled fish ranged from 5.9 to 12.2 inches in length with a large proportion (55%) measuring greater than 8 inches. An average relative weight score of 108 indicates that sampled fish were in good condition. East Lake Vermillion is an excellent option for any angler targeting white crappie in South Dakota.

- **Black Crappie**. Frame netting efforts produced a catch rate of 12.9 black crappie per net in 2024. Relative abundance was a bit below the previous sample year (CPUE = 19.0 fish per net in 2022) but higher than the long term mean (CPUE = 6.1 fish per net). Sampled fish ranged from 6.7 to 12.2 inches in length with a good proportion (45%) measuring greater than 8 inches. Three cohorts contributed to the sample, but age 2 (2022 year class) black crappie dominated catches (92% of fish sampled). They exhibited above average growth attaining a mean length of 7.7 inches by age 2.

- **Bluegill**. Bluegill abundance increased to a 10 year high in 2024, resulting in a catch rate of 6.3 fish per frame net. Relative abundance has been steadily increasing from the low observed in 2018 (CPUE = 1.2 fish per net). Netted fish ranged from 4.3 to 9.1 inches in length with a large proportion (86%) measuring greater than 6 inches. Preferred length (>8 inches) bluegill also accounted for a significant proportion (19%) of catches. They are in great condition with a mean relative weight score of 127.

For more detailed results see the computer-generated South Dakota Statewide Fisheries Survey for Vermillion East Lake (below).

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Vermillion East, McCook County
VER-Lake-62-800
2024

Lake Information

Name:	Vermillion East	**Maximum Depth:**	23 Feet
County:	McCook	**Mean Depth:**	12 Feet
Legal Description:	T102N-R53W-Sec. 14-15, 22-23, 26-27, 33-35		
Surface Area:	580 Acres		

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jun 04, 2024	5 net-nights
AFS std gill net	Jun 05, 2024	5 net-nights
frame net (std 3/4 in)	Jun 04, 2024	5 net-nights
frame net (std 3/4 in)	Jun 05, 2024	5 net-nights

Common Fish Species Present

Walleye

White Crappie

Black Crappie

Freshwater Drum

Bluegill

White Sucker

Channel Catfish

Northern Pike

Common Carp

Black Bullhead

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	1	0.1	0.1	0		0			
	Bluegill	1	0.1	0.1	100		100		110	
	Channel Catfish	8	0.7	0.5	86		43		102	4
	Common Carp	15	1.5	1.0	100		73			
	Freshwater Drum	93	8.9	4.7	71	7	43	7		
	Northern Pike	21	2.1	0.4	81		19		92	2
	Saugeye	1	0.1	0.1	0		0		102	
	Walleye	2	0.2	0.3	50		0		82	2
	White Bass	4	0.4	0.2	100		0		89	5
	White Crappie	1	0.1	0.1	100		0		107	
	White Sucker	38	3.8	1.3	100		97			
frame net (std 3/4 in)	Bigmouth Buffalo	4	0.4	0.3	50		50			
	Black Bullhead	5	0.5	0.4	80		60			
	Black Crappie	129	12.9	7.2	45	6	9	4	114	2
	Bluegill	63	6.3	3.7	86	7	19	7	127	3
	Channel Catfish	34	2.5	2.3	52	16	12		96	3
	Common Carp	18	1.8	0.9	89		78			
	Freshwater Drum	1	0.1	0.1	0		0			
	Northern Pike	10	0.8	0.6	88		25		88	4
	Saugeye	2	0.1	0.1	0		0		100	
	Walleye	1	0.1	0.1	100		0		78	
	White Crappie	556	55.6	28.5	55	3	15	2	108	1
	White Sucker	4	0.4	0.4	100		100			

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	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Avg
AFS std frame net	Black Bullhead			3.0								3.00
	Black Crappie			1.0								1.00
	Bluegill			1.3								1.30
	Channel Catfish			0.1								0.10
	Common Carp			1.6								1.60
	Freshwater Drum			0.2								0.20
	Green Sunfish			0.1								0.10
	Northern Pike			0.5								0.50
	Sunfish Hybrid			0.0								0.00
	Walleye			0.7								0.70
	White Bass			0.8								0.80
	White Crappie			0.0								0.00
	White Sucker			6.9								6.90
AFS std gill net	Bigmouth Buffalo			0.0	0.0	0.0			0.0		0.1	0.02
	Black Bullhead			0.2	0.1	0.2			0.0		0.0	0.10
	Black Crappie			0.2	0.1	0.0			0.3		0.0	0.12
	Bluegill			0.1	0.0	0.0			0.0		0.1	0.04
	Channel Catfish			3.4	3.8	0.2			1.9		0.7	2.00
	Common Carp			1.6	0.5	1.3			6.3		1.5	2.24
	Freshwater Drum			5.7	3.8	7.0			3.2		8.9	5.72
	Northern Pike			0.6	0.3	0.9			2.8		2.1	1.34
	Redhorse			0.0	0.0	0.0			0.0		0.0	0.00
	Saugeye			0.0	0.0	0.0			0.0		0.1	0.02
	Walleye			1.1	0.7	0.2			1.0		0.2	0.64
	White Bass			2.6	6.5	0.0			0.0		0.4	1.90
	White Crappie			0.1	0.1	0.1			0.0		0.1	0.08
	White Sucker			10.5	8.8	4.6			2.9		3.8	6.12
	Yellow Perch			0.0	0.1	0.0			0.0		0.0	0.02
fall night EF-WAE*	Walleye	82.5										82.50
frame net (std 3/4 in)	Bigmouth Buffalo	0.8	0.0		0.1	0.0			0.2		0.4	0.25
	Black Bullhead	50.1	12.8		2.8	0.7			1.2		0.5	11.35
	Black Crappie	0.2	0.9		1.5	1.8			19.0		12.9	6.05
	Bluegill	0.8	3.3		1.2	3.0			3.2		6.3	2.97

		CPUE										
Gear	Species	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Avg
frame net (std 3/4 in)	Channel Catfish	1.5	0.5		0.5	0.1			0.2		2.5	0.88
	Common Carp	10.7	2.1		4.0	0.7			2.7		1.8	3.67
	Freshwater Drum	1.2	0.1		0.4	0.1			0.2		0.1	0.35
	Largemouth Bass	0.1	0.1		0.0	0.0			0.0		0.0	0.03
	Northern Pike	1.9	1.9		1.0	1.5			0.7		0.8	1.30
	Saugeye	0.0	0.0		0.0	0.0			0.0		0.1	0.02
	Sunfish Hybrid	0.0	0.0		0.0	0.1			0.0		0.0	0.02
	Walleye	0.7	0.5		0.3	0.7			0.5		0.1	0.47
	White Bass	3.8	2.1		5.9	0.0			0.1		0.0	1.98
	White Crappie	0.6	1.1		1.2	0.9			7.9		55.6	11.22
	White Sucker	11.7	2.9		13.5	7.5			0.9		0.4	6.15
	Yellow Perch	0.0	0.0		0.0	0.0			0.0		0.0	0.00
std exp gill net	Bigmouth Buffalo	0.0	0.0									0.00
	Black Bullhead	1.8	0.0									0.90
	Black Crappie	0.0	0.0									0.00
	Bluegill	0.8	0.0									0.40
	Channel Catfish	2.8	1.8									2.30
	Common Carp	0.0	1.3									0.65
	Freshwater Drum	5.3	5.2									5.25
	Northern Pike	1.8	2.7									2.25
	Walleye	5.5	3.7									4.60
	White Bass	6.5	9.0									7.75
	White Crappie	0.5	0.0									0.25
	White Sucker	8.5	12.5									10.50
	Yellow Perch	1.3	1.2									1.25

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	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
AFS std frame net	Black Bullhead	PSD			97							
		PSD-P			80							
	Black Crappie	PSD			60							
		PSD-P			20							
		Wr			105							
	Bluegill	PSD			77							
		PSD-P			0							
		Wr			121							
	Channel Catfish	PSD			100							
		PSD-P			0							
		Wr			101							
	Common Carp	PSD			88							
		PSD-P			75							
	Northern Pike	PSD			60							
		PSD-P			40							
		Wr			87							
	Walleye	PSD			71							
		PSD-P			29							
		Wr			77							
	White Crappie	PSD			0							
		PSD-P			0							
	White Sucker	PSD			100							
		PSD-P			100							
AFS std gill net	Black Bullhead	PSD			100	100	0					
		PSD-P			50	100	0					
	Black Crappie	PSD			50	0	0			100		
		PSD-P			0	0	0			67		
		Wr			113	124				107		
	Bluegill	PSD			100							100
		PSD-P			100							100
		Wr			119							110
	Channel Catfish	PSD			79	82	100			84		86
		PSD-P			3	18	50			26		43

			Year									
Gear	Species	Index	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
AFS std gill net	Channel Catfish	Wr			109	104	117			105		102
	Common Carp	PSD			50	60	100			68		100
		PSD-P			31	20	85			10		73
	Northern Pike	PSD			100	100	33			61		81
		PSD-P			17	0	11			4		19
		Wr			90	90	89			86		92
	Walleye	PSD			64	86	100			60		50
		PSD-P			27	14	0			10		0
		Wr			95	80	84			84		82
	White Crappie	PSD			100	0	0					100
		PSD-P			100	0	0					0
		Wr			104	113	109					107
	White Sucker	PSD			100	94	100			100		100
		PSD-P			99	94	91			100		97
frame net (std 3/4 in)	Black Bullhead	PSD	99	99		100	71			92		80
		PSD-P	50	70		93	43			0		60
	Black Crappie	PSD	100	89		100	72			85		45
		PSD-P	0	22		60	44			40		9
		Wr	119	101		106	102			108		114
	Bluegill	PSD	88	85		42	80			81		86
		PSD-P	50	42		17	50			50		19
		Wr	118	116		118	125			121		127
	Channel Catfish	PSD	80	20		80	100			100		52
		PSD-P	40	0		0	100			100		12
		Wr	103	99		100	113			100		96
	Common Carp	PSD	98	76		88	86			85		89
		PSD-P	67	52		55	43			15		78
	Northern Pike	PSD	89	89		100	27			57		88
		PSD-P	16	16		20	0			14		25
		Wr	83	83		80	92			87		88
	Walleye	PSD	71	80		67	43			100		100
		PSD-P	29	20		33	14			60		0
		Wr	83	81		89	85			80		78
	White Crappie	PSD	67	64		50	56			73		55
		PSD-P	50	9		42	11			35		15
		Wr	100	102		110	108			106		108
	White Sucker	PSD	98	100		100	100			100		100

			Year									
Gear	Species	Index	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
frame net (std 3/4 in)	White Sucker	PSD-P	96	83		99	97			100		100
std exp gill net	Black Bullhead	PSD	86									
		PSD-P	29									
	Bluegill	PSD	67									
		PSD-P	0									
		Wr	119									
	Channel Catfish	PSD	73	82								
		PSD-P	36	45								
		Wr	112	108								
	Common Carp	PSD		100								
		PSD-P		75								
	Northern Pike	PSD	86	81								
		PSD-P	0	13								
		Wr	98	90								
	Walleye	PSD	9	36								
		PSD-P	5	5								
		Wr	83	81								
	White Crappie	PSD	0									
		PSD-P	0									
		Wr	98									
	White Sucker	PSD	100	100								
		PSD-P	65	87								

Length at Capture

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

Species: Black Crappie

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2024	121		196 (111)	251 (6)		286 (4)					
2018	15		224 (1)	246 (2)	260 (10)	290 (2)					

Species: Bluegill

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2018	12	88 (1)	133 (7)	200 (3)			249 (1)				

Species: Walleye

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2019	2							467 (1)	499 (1)		
2018	23	231 (16)	328 (1)	402 (2)	414 (2)	429 (1)			588 (1)		
2016	28	214 (8)	316 (13)	419 (2)			466 (4)	434 (1)			
2015	30	227 (14)	310 (14)		394 (1)					646 (1)	

Fish Condition

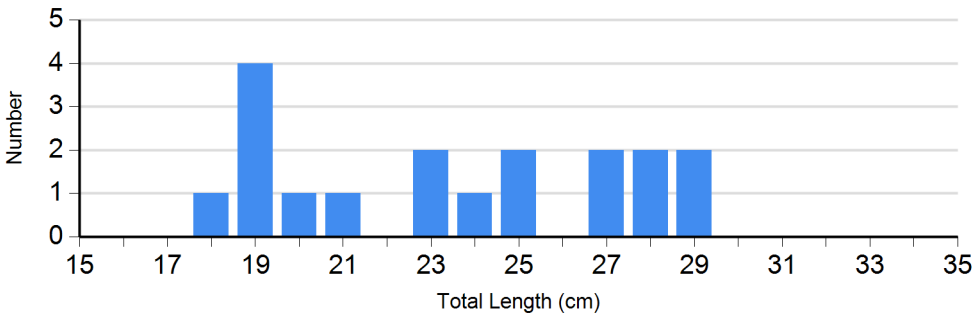
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Black Crappie Frame Net	2022	28		86	111 (0.9)	76	105 (1.3)	0	
	2024	71	117 (1.8)	46	113 (1.2)	11	95 (1.2)	1	83
Bluegill Frame Net	2022	6	117 (4.0)	10	118 (7.8)	16	124 (3.2)	0	
	2024	9	133 (10.2)	42	125 (1.7)	12	128 (2.7)	0	
Channel Catfish Gill Net	2022	3	98 (5.2)	11	107 (7.6)	4	104 (7.3)	1	106
	2024	1	100	3	100 (5.8)	1	100	2	108 (3.2)
Northern Pike Gill Net	2022	11	87 (1.1)	16	85 (1.5)	1	108	0	
	2024	4	85 (1.5)	13	91 (1.3)	4	102 (2.7)	0	
Walleye Gill Net	2022	4	86 (1.9)	5	82 (2.2)	1	84	0	
	2024	1	84	1	81	0		0	
White Crappie Frame Net	2022	21	114 (1.4)	30	107 (1.7)	23	99 (1.3)	5	92 (2.5)
	2024	250	112 (1.4)	221	103 (0.6)	70	97 (2.8)	15	88

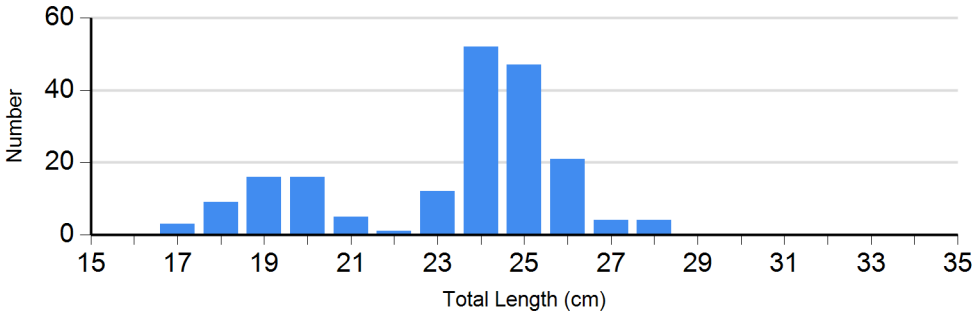
Length Frequency Distribution

Length frequency histogram of species sampled by year.

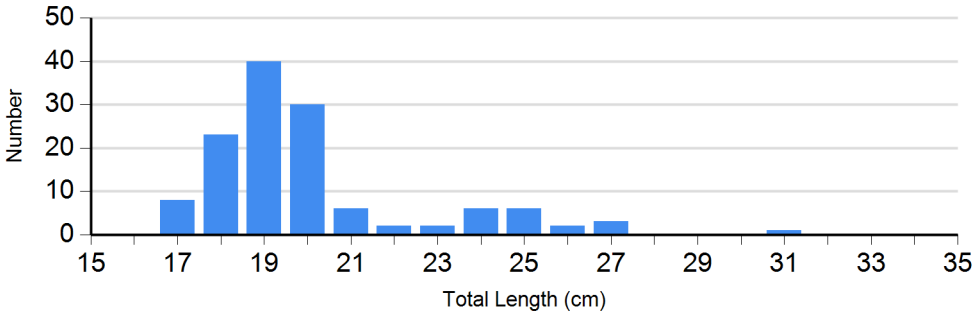
Species: Black Crappie
Gear: frame net (std 3/4 in)



2019

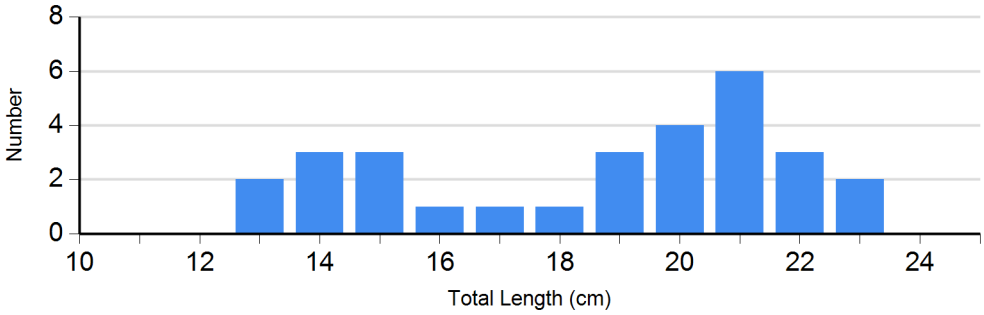


2022

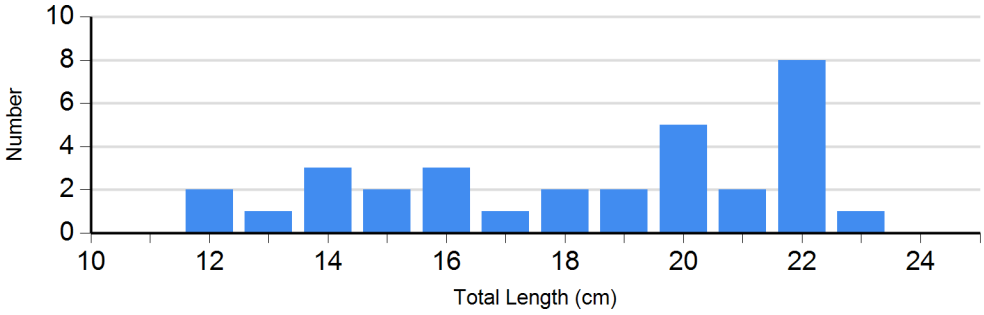


2024

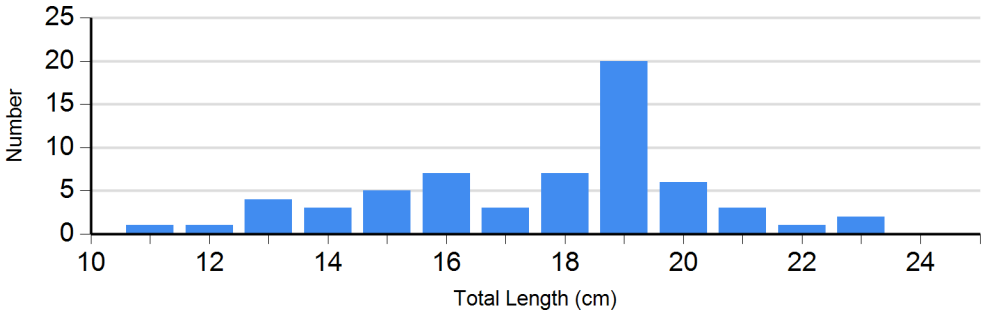
Species: Bluegill
Gear: frame net (std 3/4 in)



2019

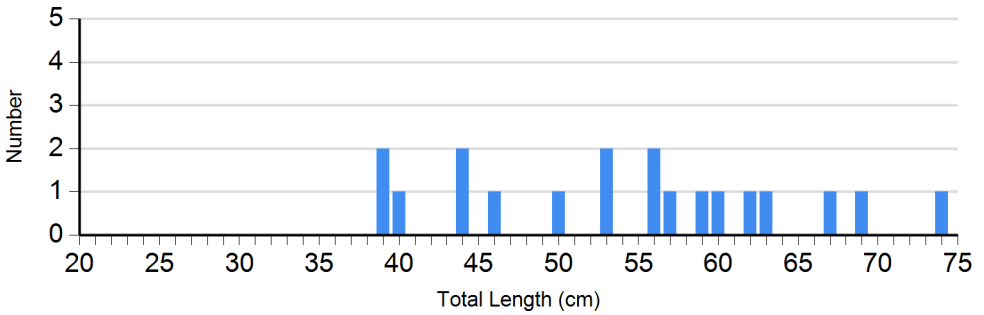


2022



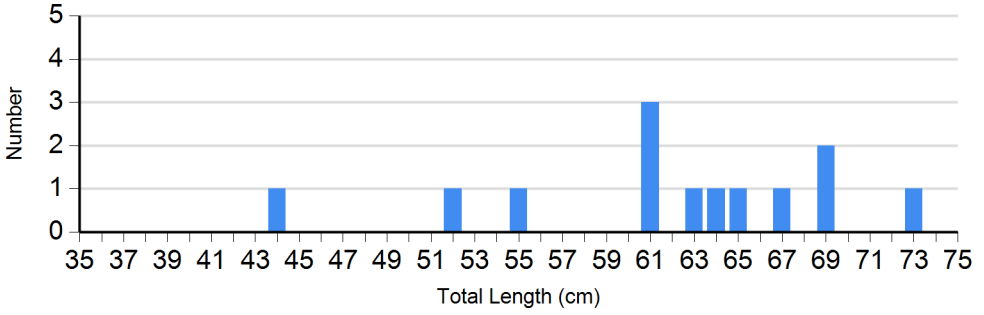
2024

Species: Channel Catfish
Gear: AFS std gill net

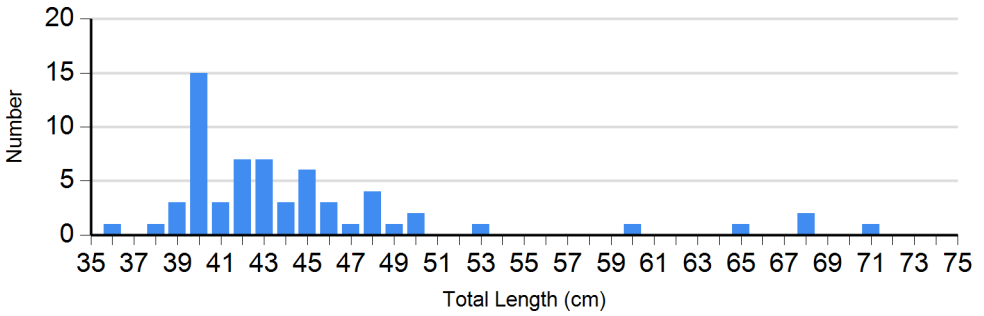


2022

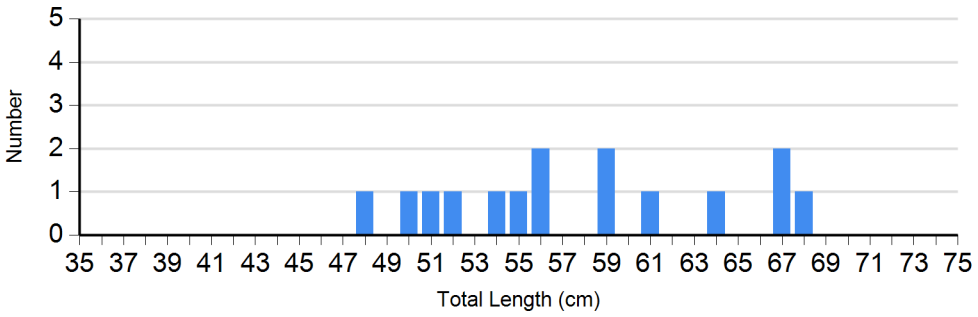
Species: Common Carp
Gear: AFS std gill net



2019

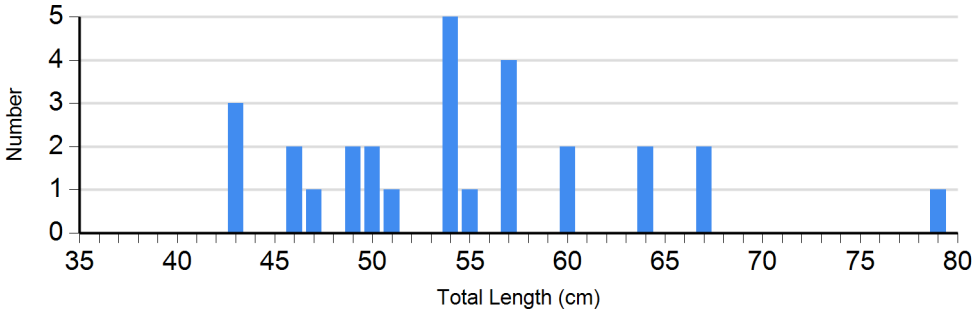


2022

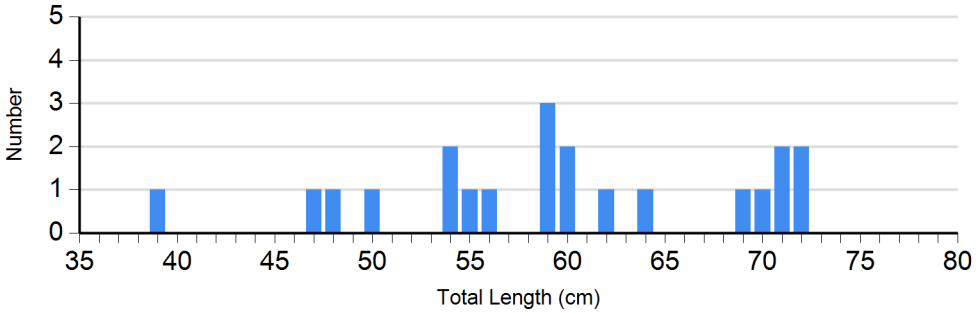


2024

Species: Northern Pike
Gear: AFS std gill net

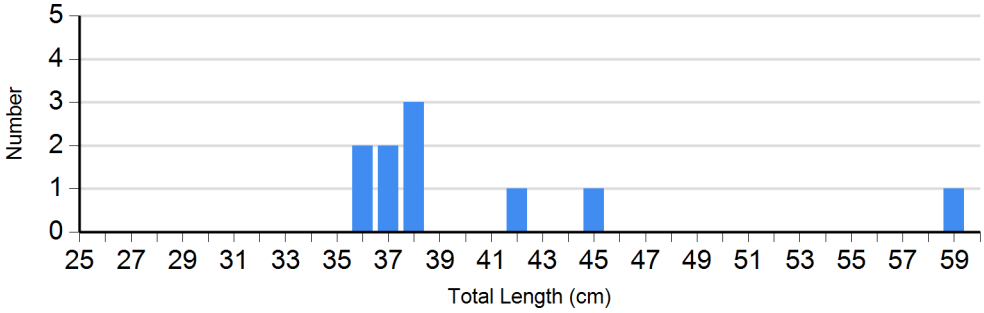


2022



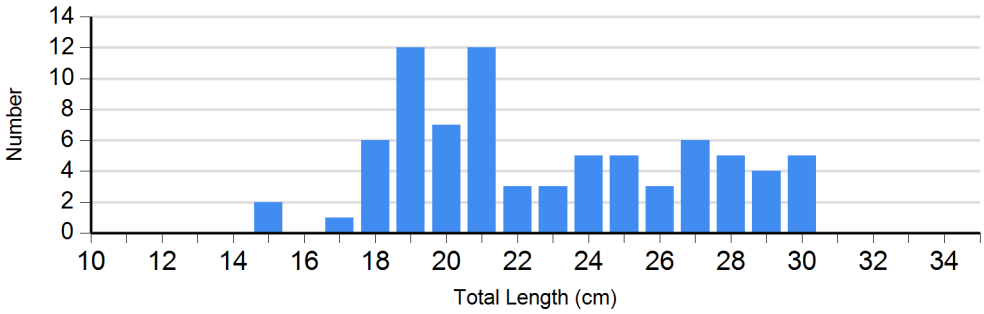
2024

Species: Walleye
Gear: AFS std gill net

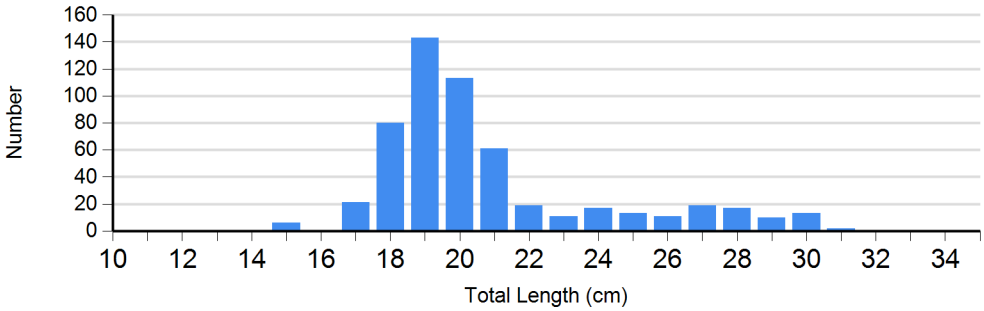


2022

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

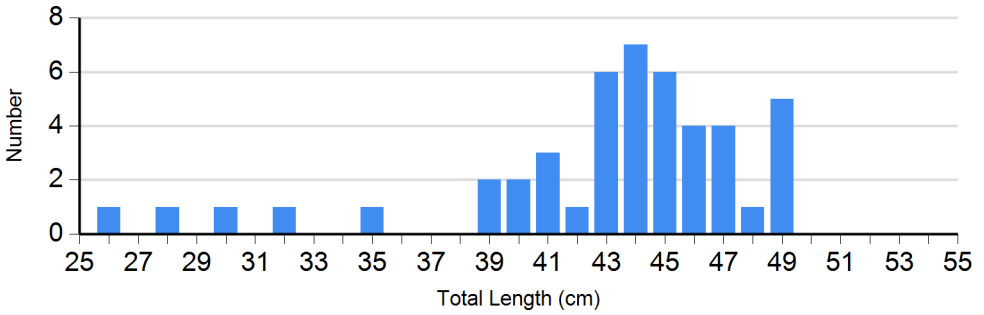


2022

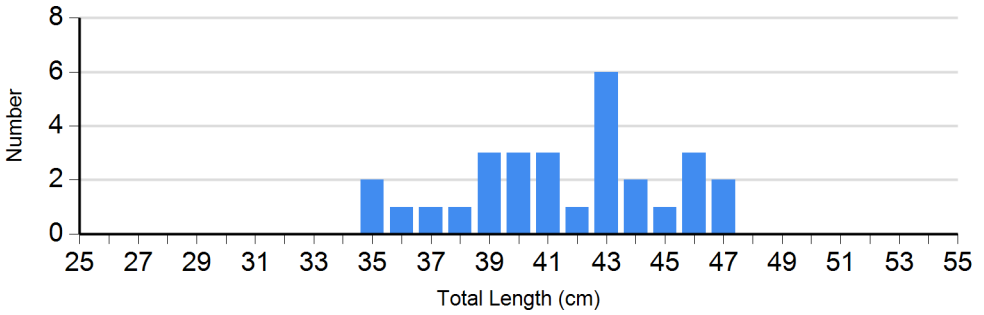


2024

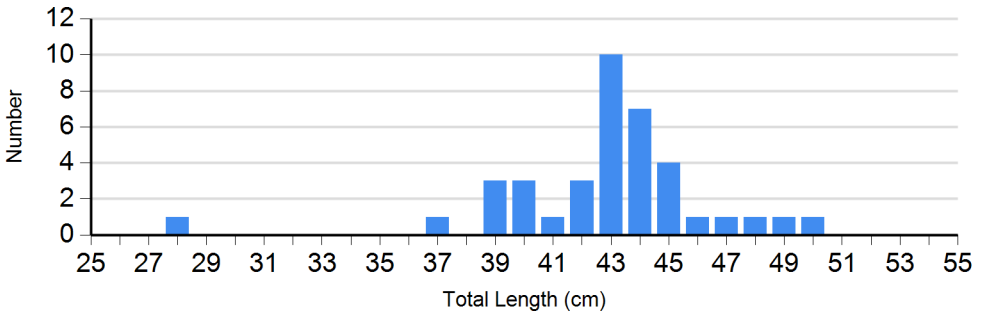
Species: White Sucker
Gear: AFS std gill net



2019



2022

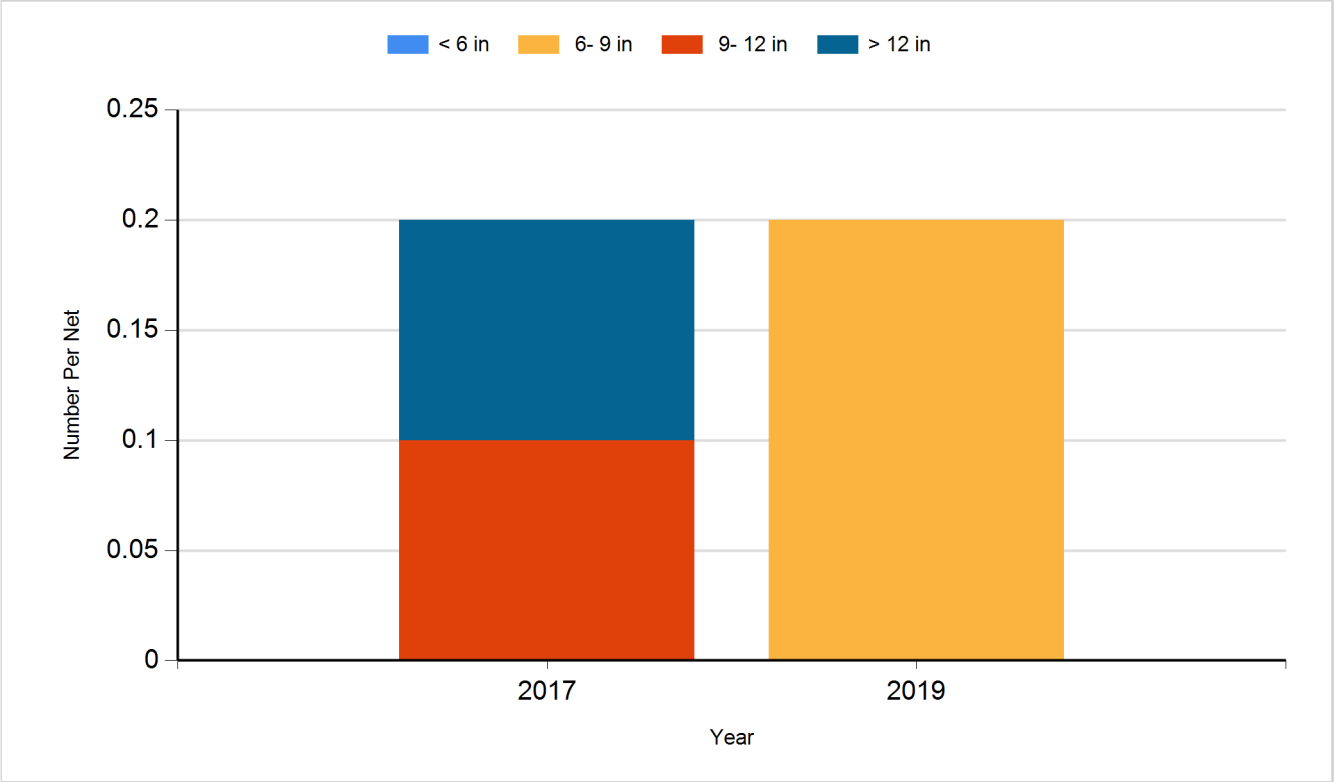


2024

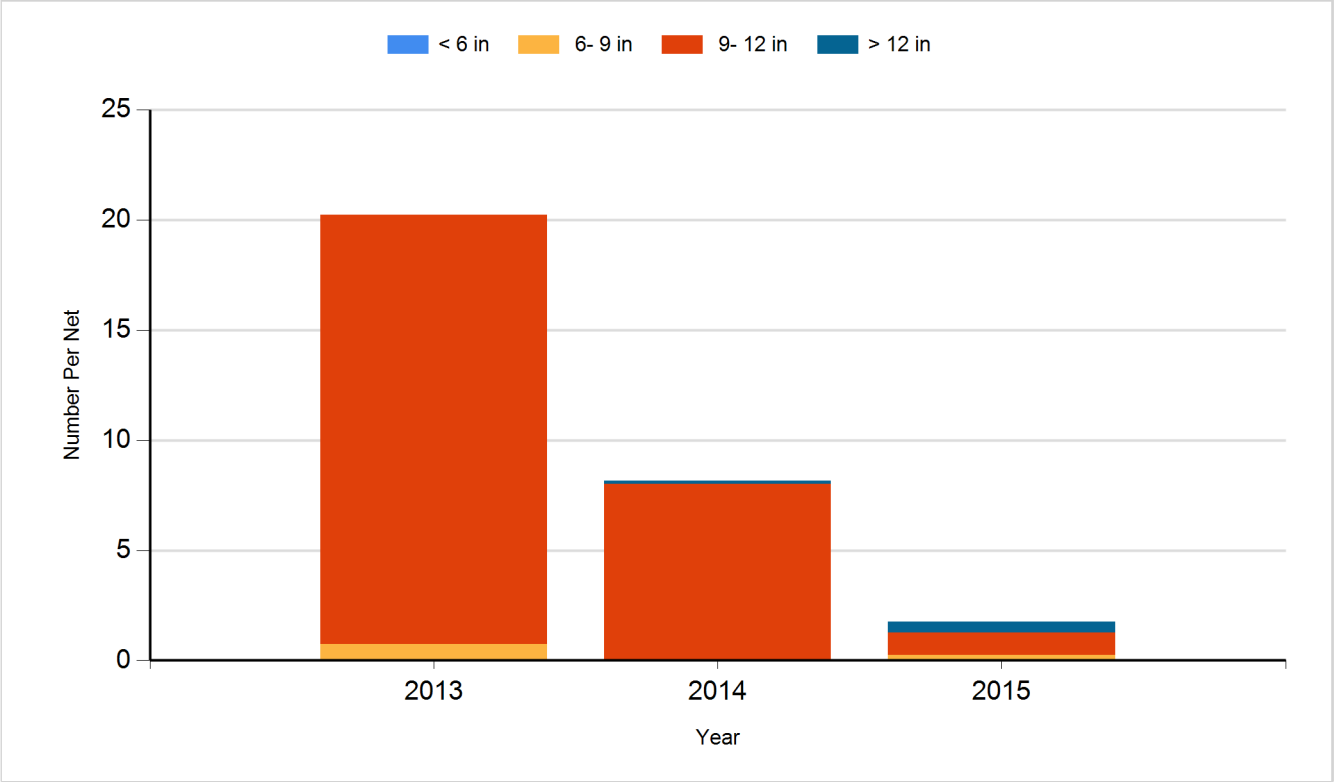
Historic Fish Sizes and Relative Abundance

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

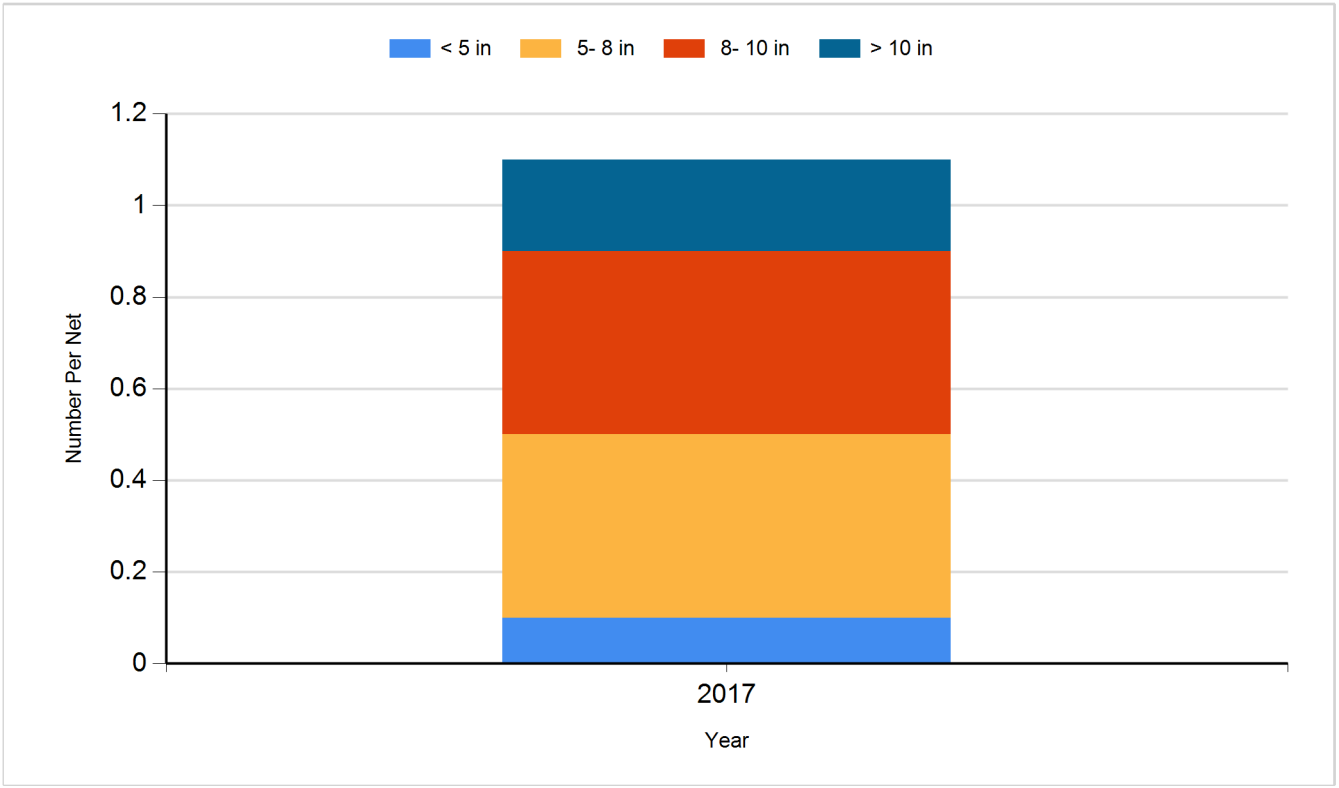
Species: Black Bullhead
Gear: AFS std gill net



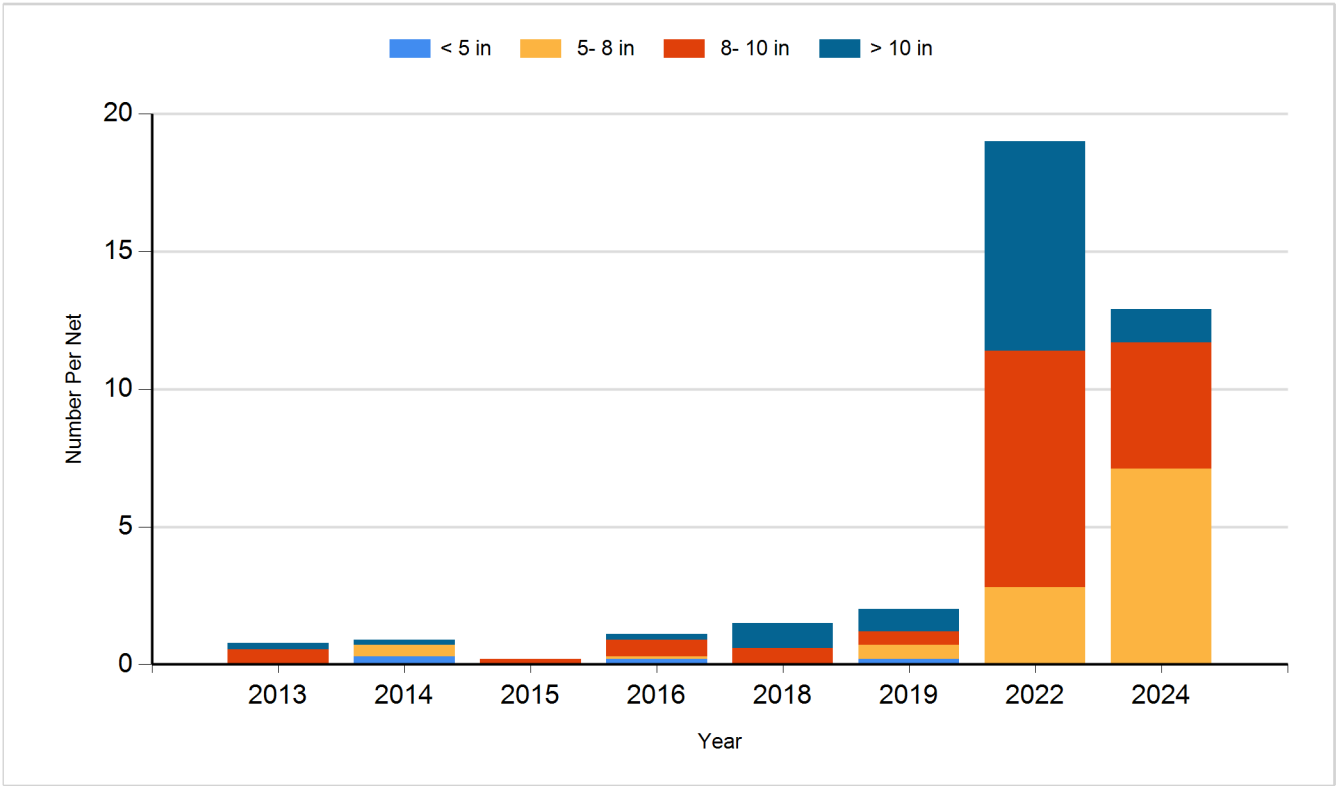
Species: Black Bullhead
Gear: std exp gill net



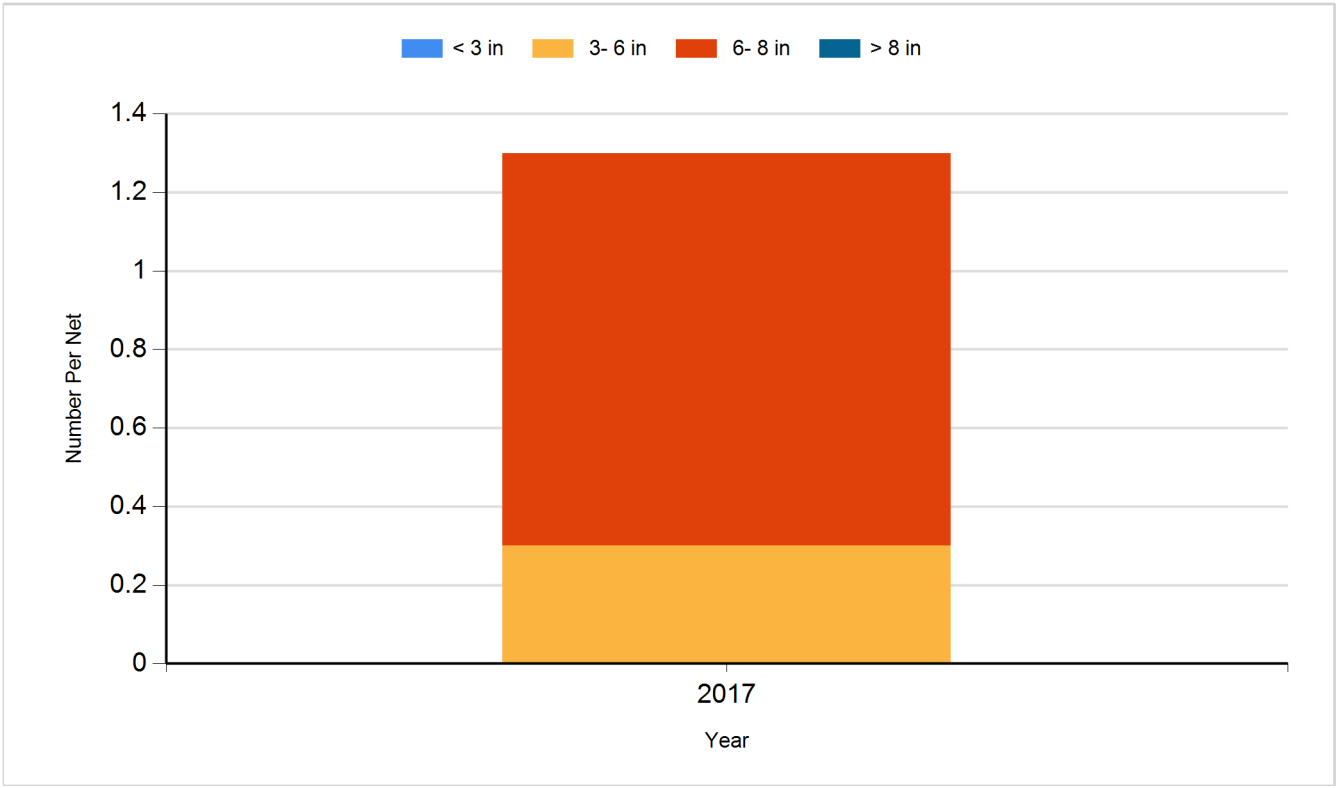
Species: Black Crappie
Gear: AFS std frame net



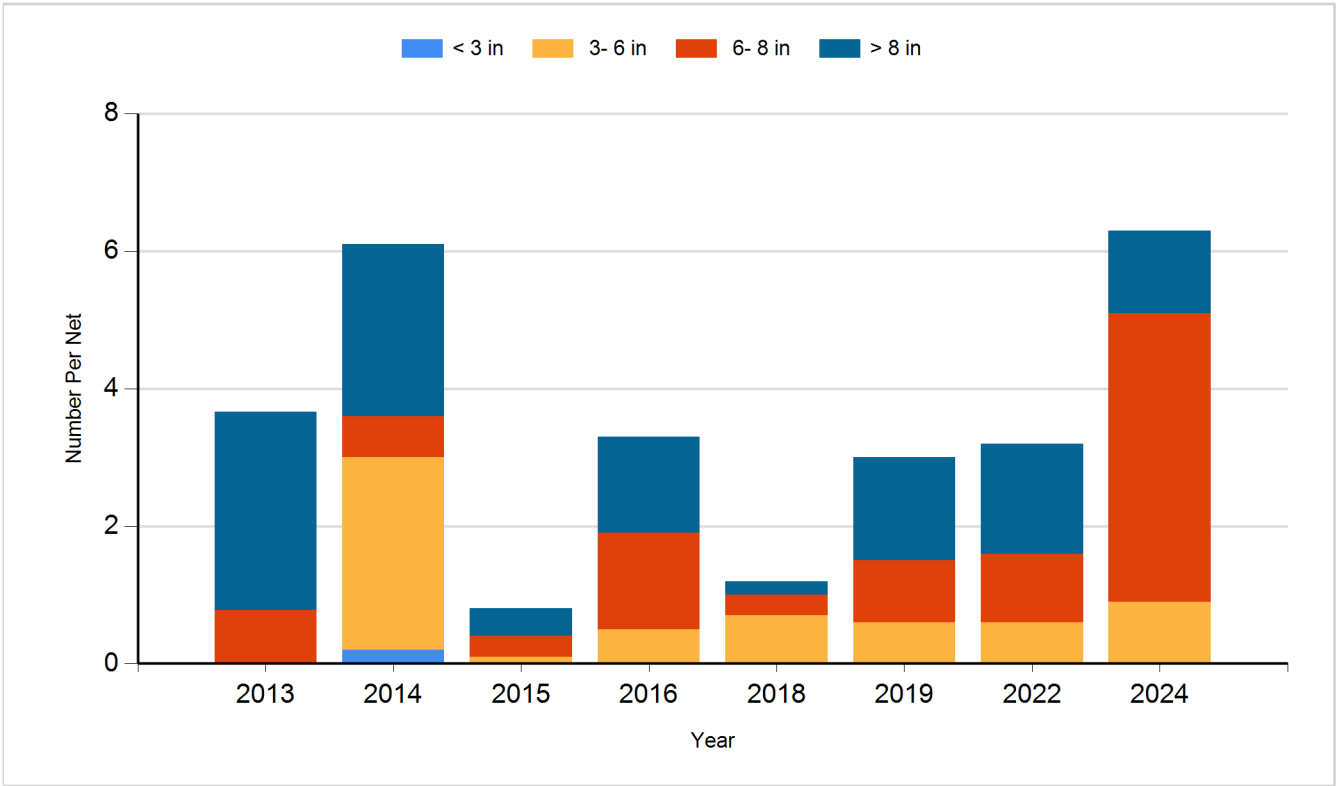
Species: Black Crappie
Gear: frame net (std 3/4 in)



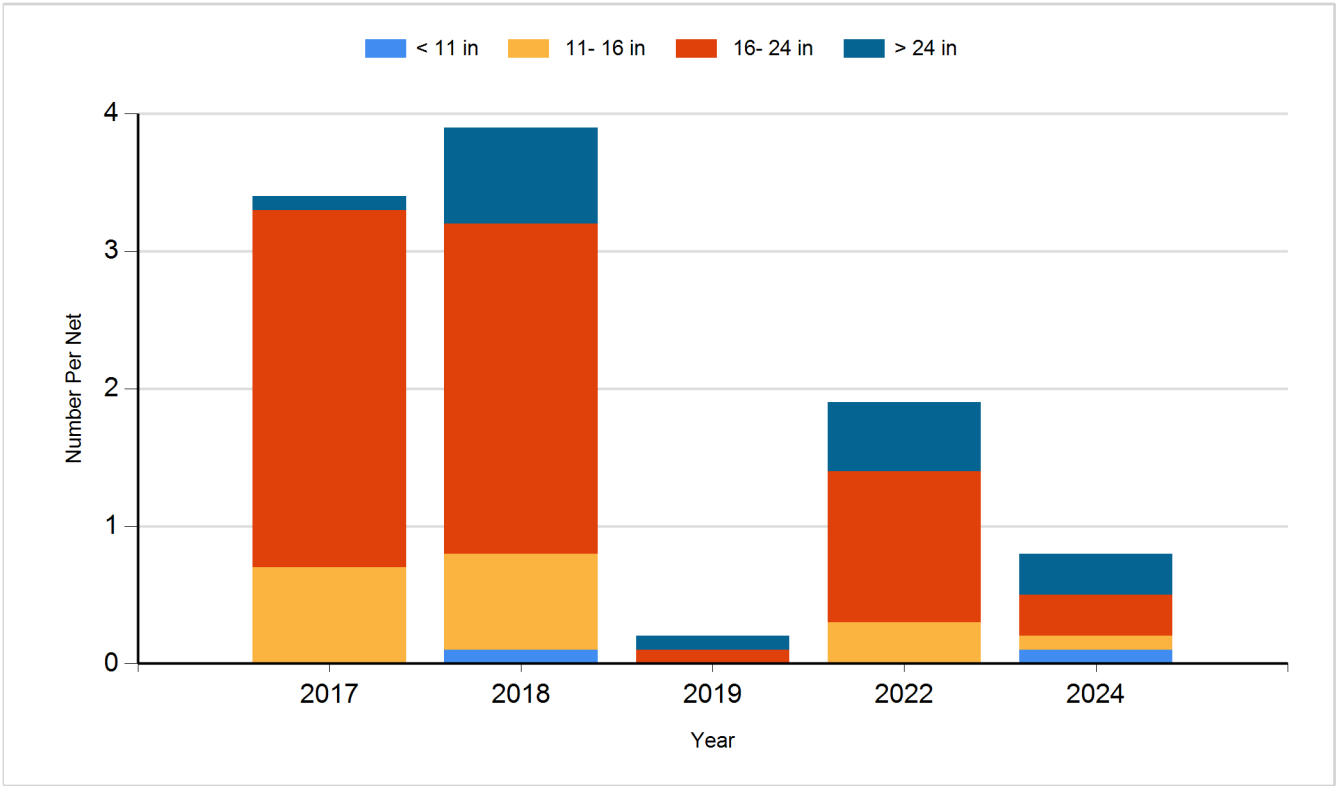
Species: Bluegill
Gear: AFS std frame net



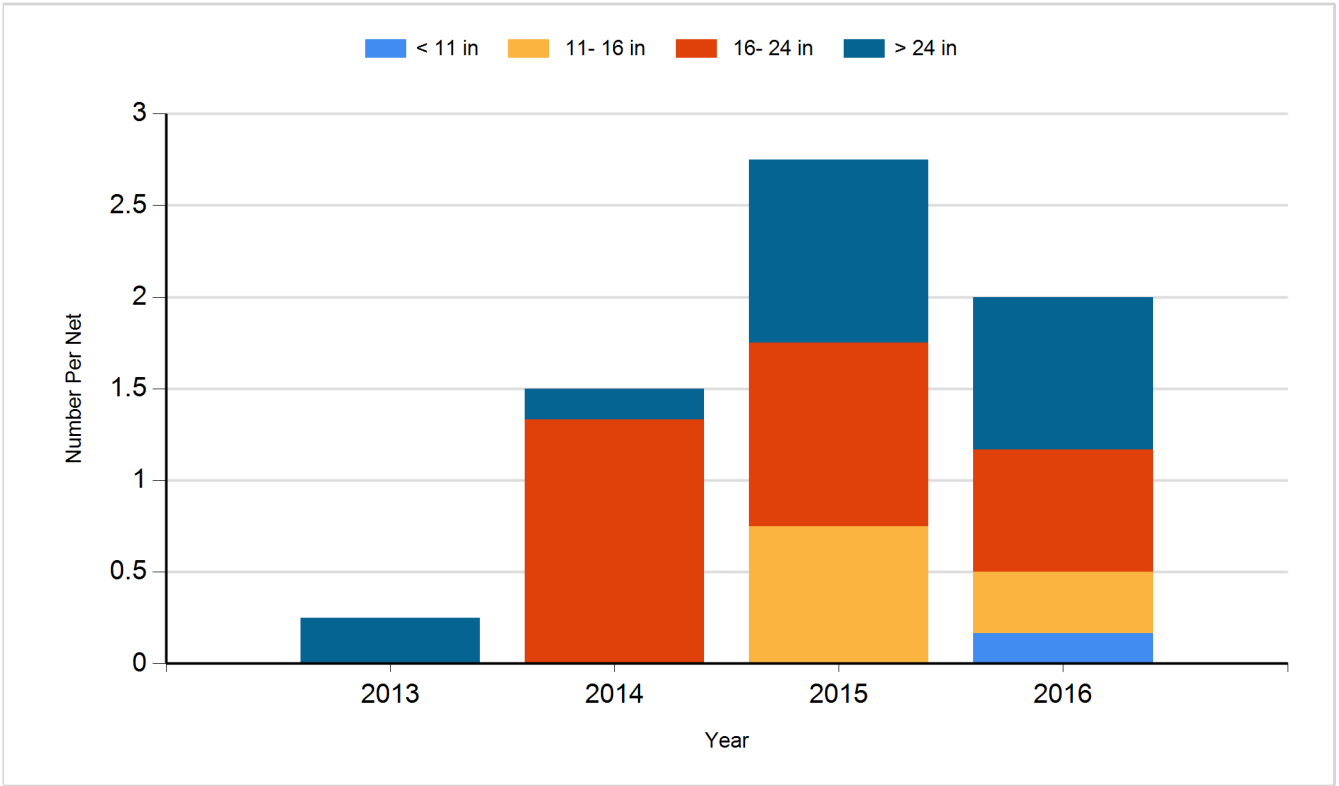
Species: Bluegill
Gear: frame net (std 3/4 in)



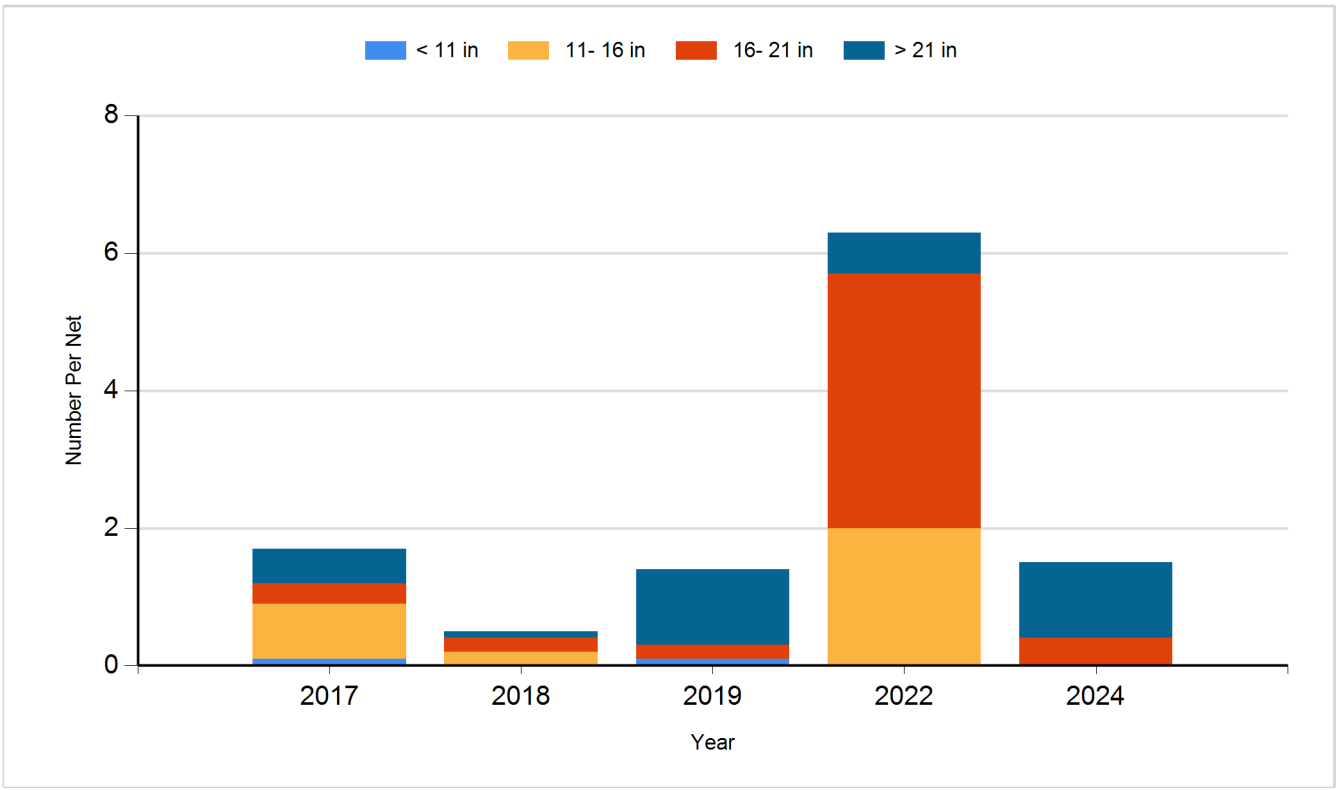
Species: Channel Catfish
Gear: AFS std gill net



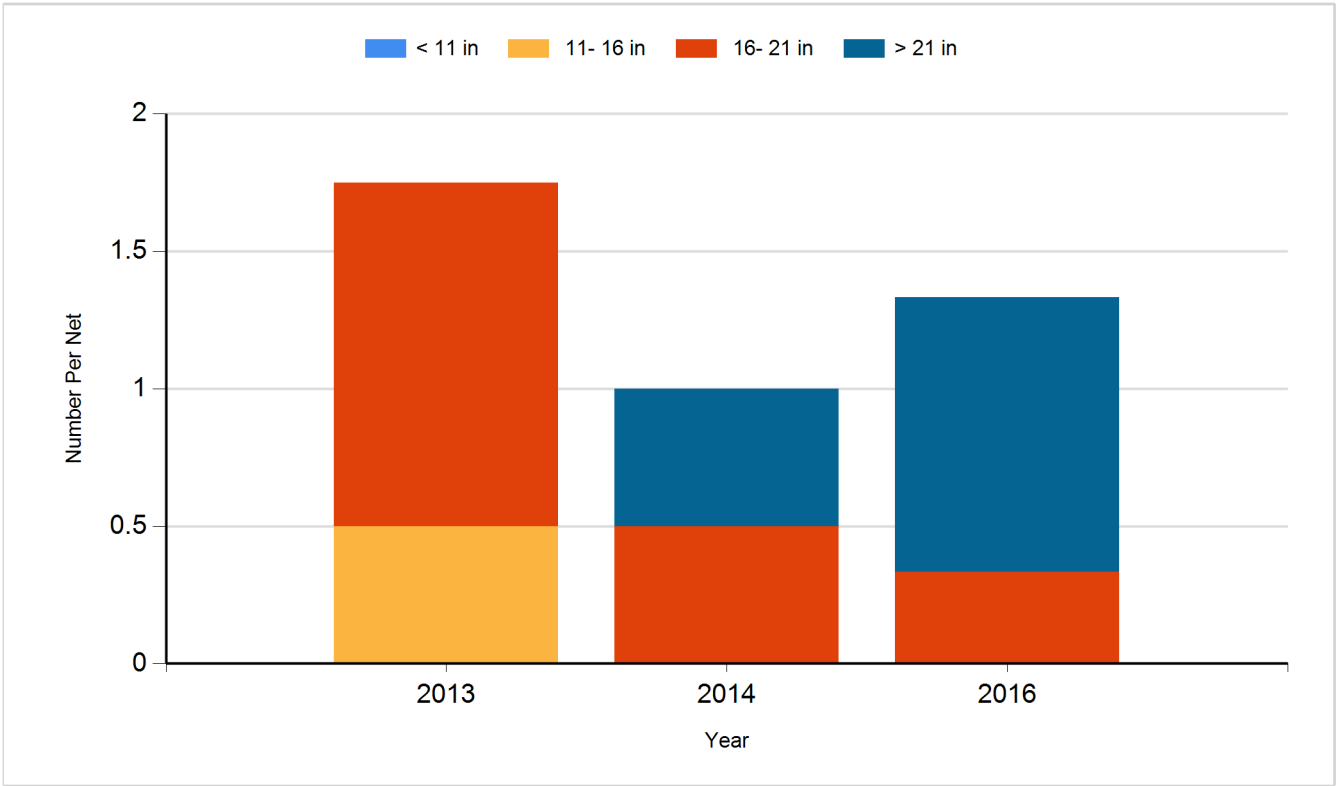
Species: Channel Catfish
Gear: std exp gill net



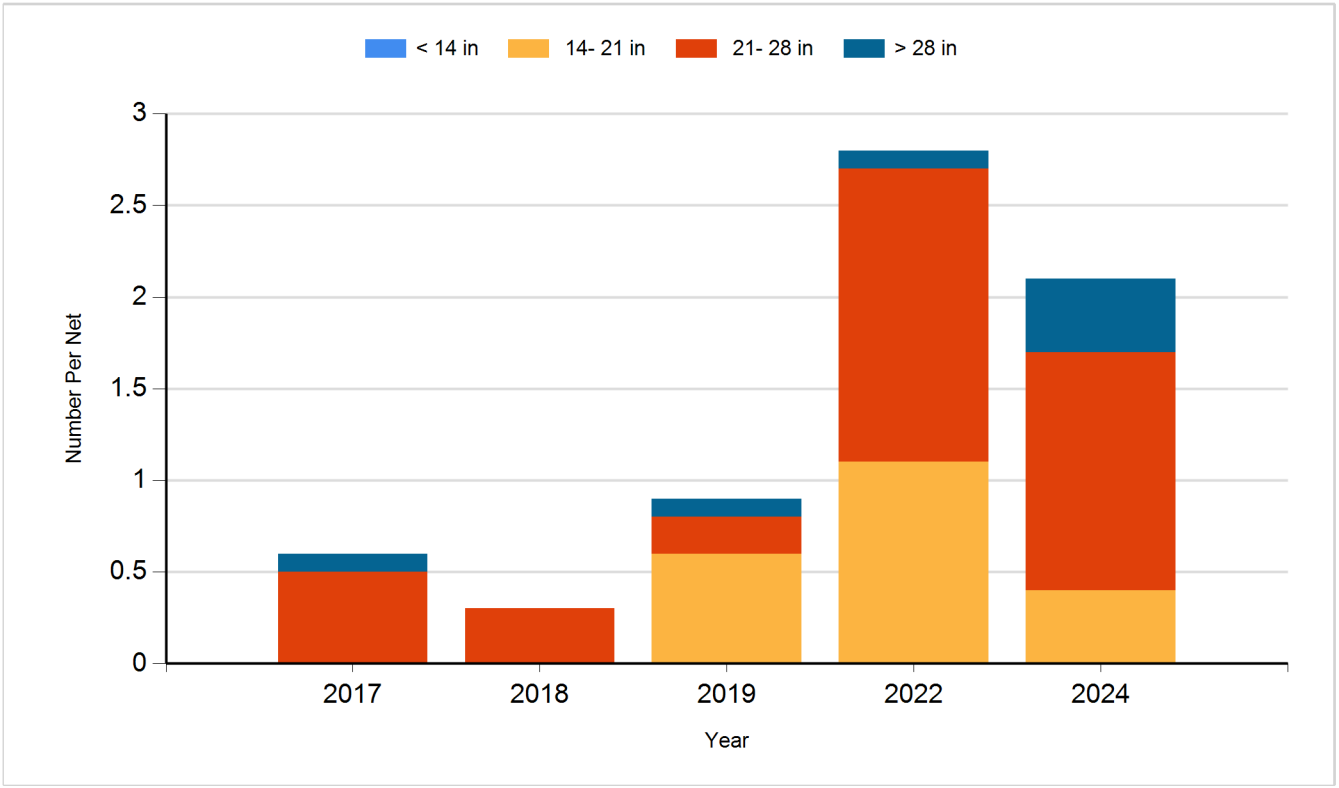
Species: Common Carp
Gear: AFS std gill net



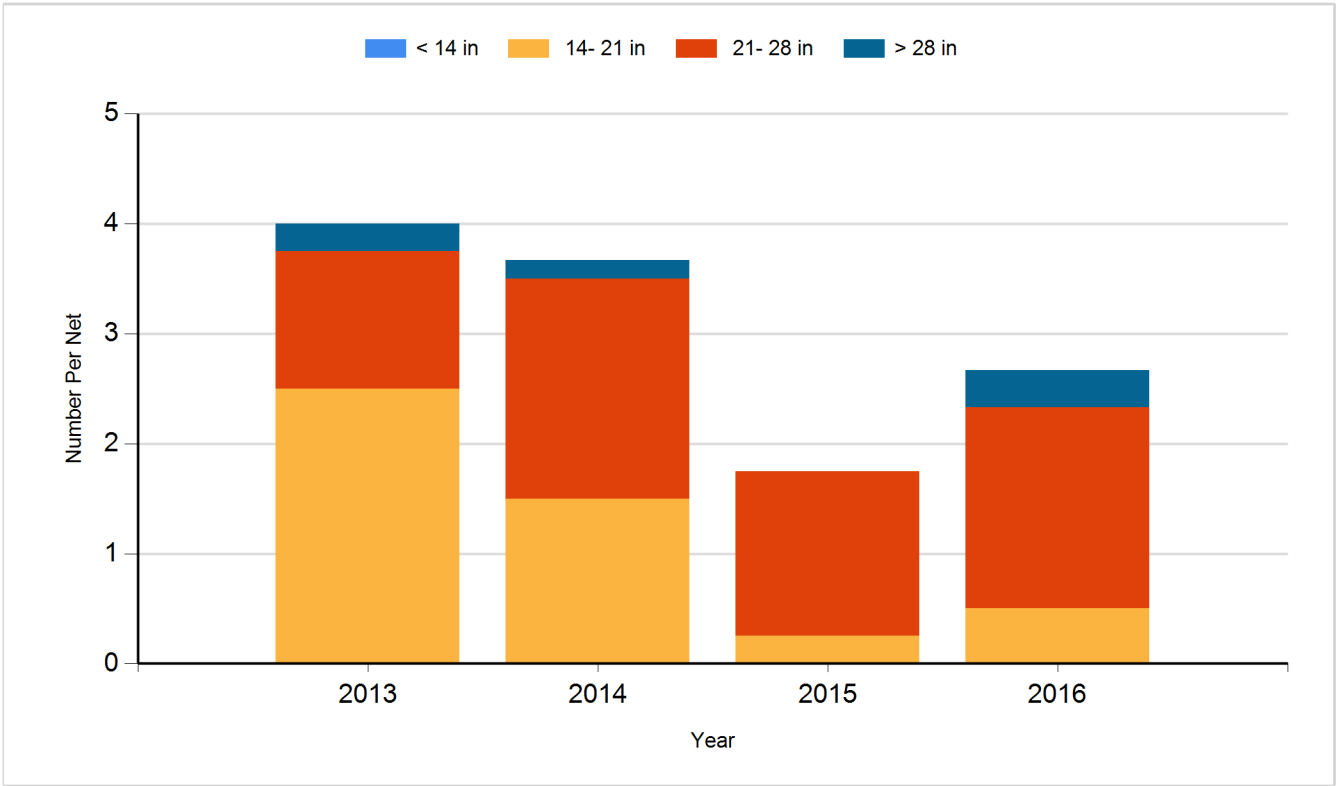
Species: Common Carp
Gear: std exp gill net



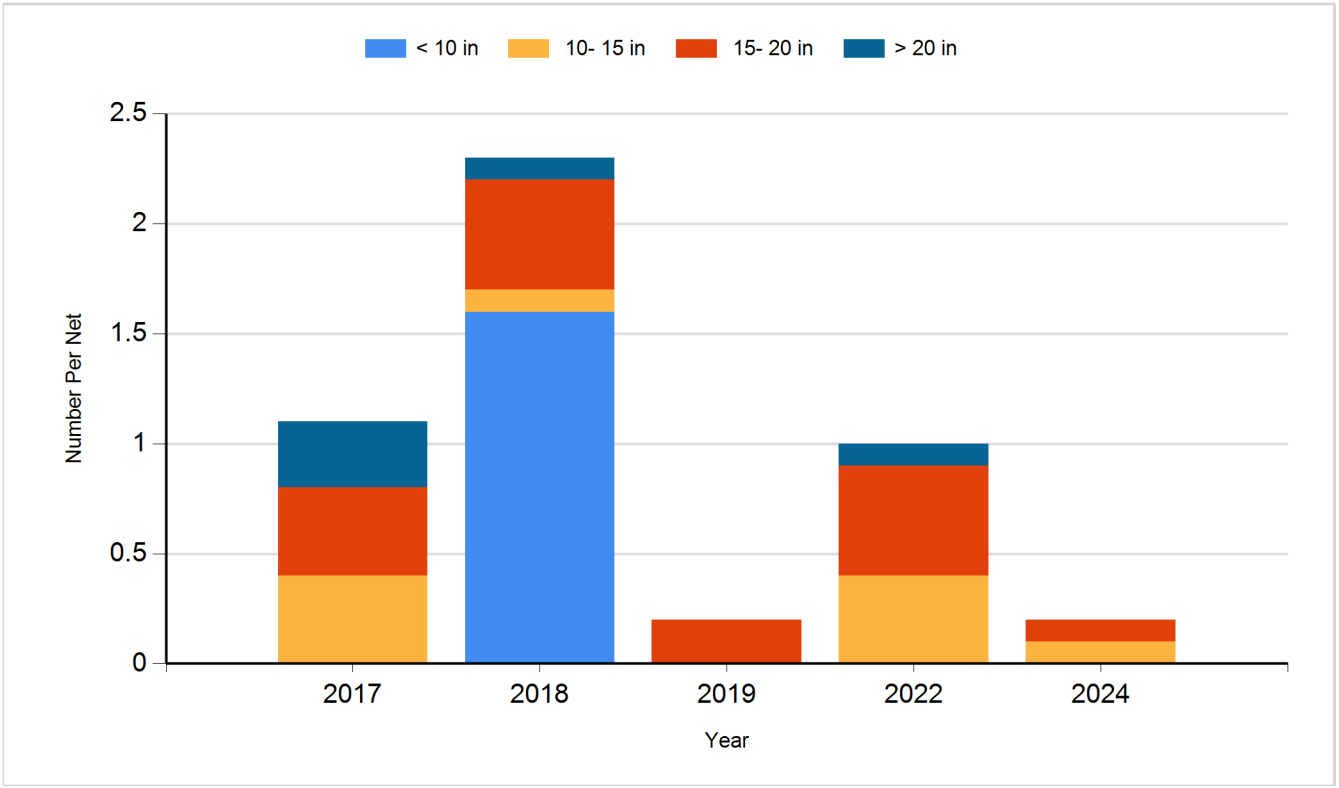
Species: Northern Pike
Gear: AFS std gill net



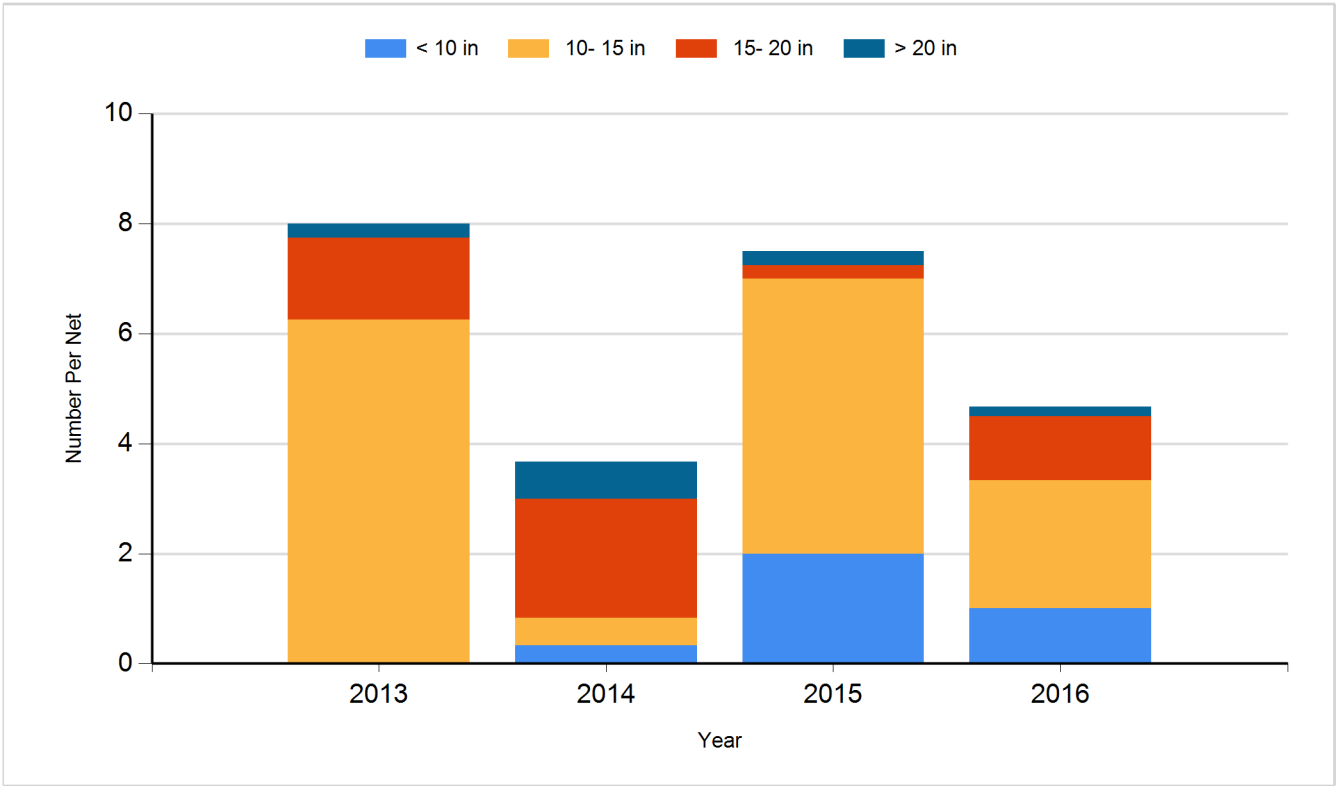
Species: Northern Pike
Gear: std exp gill net



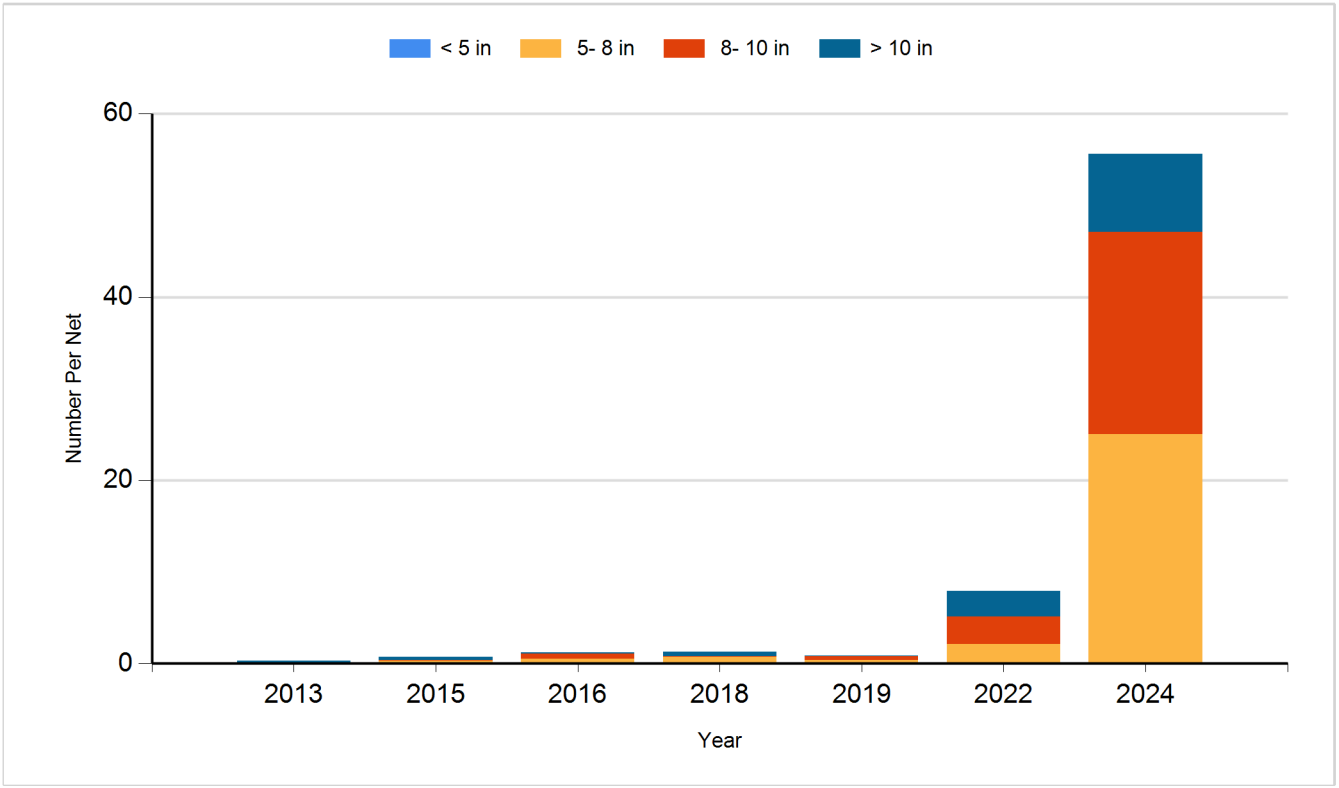
Species: Walleye
Gear: AFS std gill net



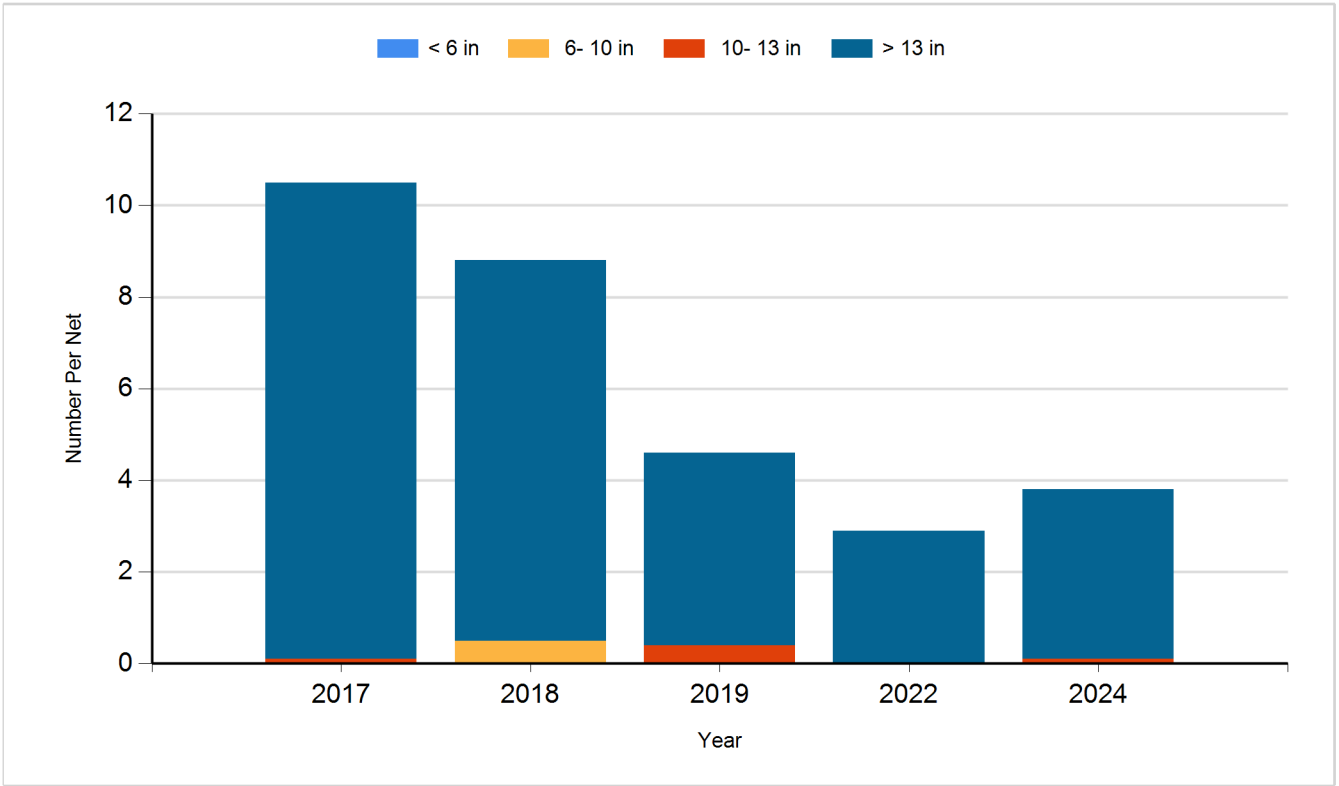
Species: Walleye
Gear: std exp gill net



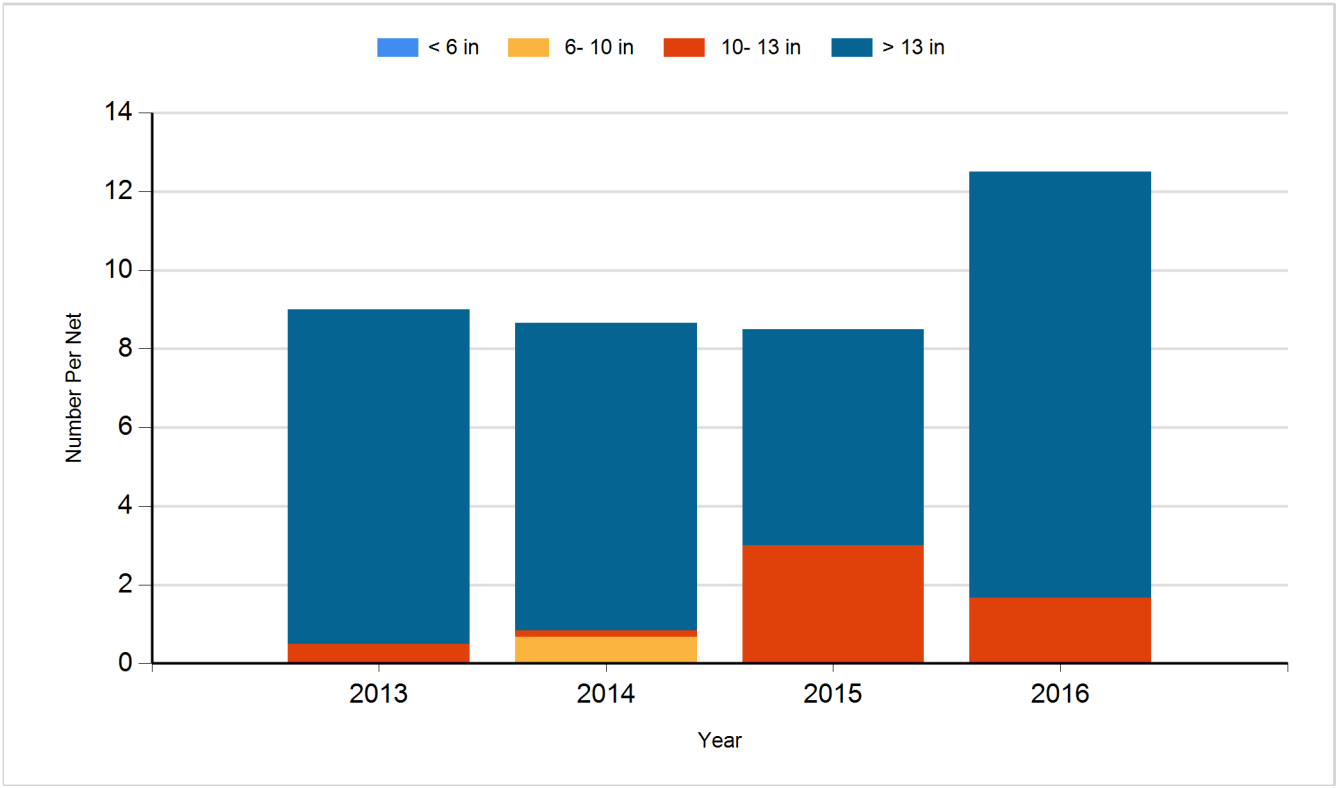
Species: White Crappie
Gear: frame net (std 3/4 in)



Species: White Sucker
Gear: AFS std gill net



Species: White Sucker
Gear: std exp gill net



Fish Stocking

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

Year	Species	Size	Number
2018	Walleye	Small Fingerling	35,280
2019	Walleye	Fingerling	7,475
2019	Walleye	Small Fingerling	35,905
2019	Yellow Perch	Small Fingerling	284,320
2021	Walleye	Fingerling	36,960
2022	Walleye	Juvenile	36,180
2023	Saugeye	Fry	300,000
2024	Walleye	Juvenile	37,400