Flat Creek Lake Survey Summary

Flat Creek Lake is a 203-acre impoundment located ten miles south of Lemmon on Highway 73. The primary species in the lake are Walleye, Black and White Crappie, Northern Pike, Black Bullhead, Largemouth Bass, Yellow Perch and Common Carp. Gizzard Shad were introduced in 2022 as a forage species.

Black Bullhead. Black Bullhead numbers were down this year with 17.5 bullheads per frame net, compared to 193.0 last year. Fish were on the small side with the bulk of the sample being between 5 and 8 inches.

Black Crappie. Black Crappie numbers increased to 16.5 per net. There were two young age classes present and a group of fish in the 10–12-inch range. This is the most crappies sampled in recent history. Last year, only one Black Crappie was sampled. Additionally, 200 black crappie were stocked the spring of 2024

Largemouth bass. Flat creek was stocked with 200 adult bass to try and reestablish a bass fishery. Nineteen of these bass were captured in the electrofishing sample, they were in the 9 to 12 inch range.

Walleye. Fall, nighttime electrofishing yielded an overall catch rate of 72.0 walleye per hour. The adult walleye catch rate was 58 per hour. Last year, daytime electrofishing catch rates were 140.0 and 76.0 respectively. Fish ranged in size from 3 to 25 inches. Flat Creek was stocked with 40,140 small fingerlings in the spring of 2024.

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Flat Creek Dam, Perkins County
GRA-Lake-767-000
2024

Lake Information

Name: Flat Creek Dam

County: Perkins

Surface Area: 164 Acres

Surveys and Investigations

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

Gear	Date	Effort
boat shocker (night)	Oct 01, 2024	3600 seconds
frame net (std 3/4 in)	Jun 25, 2024	6 net-nights

Common Fish Species Present

Yellow Perch

Walleye

Northern Pike

Channel Catfish

Bluegill

Black Crappie

Black Bullhead

Largemouth Bass

White Crappie

Green Sunfish

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
boat shocker (night)	Largemouth Bass	19	19.0	12.8	16		0		106	3
	Walleye*	72	72.0	15.3	29	9	9	6	96	2
frame net (std 3/4 in)	Black Bullhead	418	63.3	24.3	2	1	0		79	1
	Black Crappie	99	9.0	3.8	41	10	33	9	100	3
	Channel Catfish	3	0.3	0.5	0		0		88	2
	Common Carp	3	0.5	0.5	0		0		78	4
	Green Sunfish	7	1.2	0.9	0		0		117	6
	Northern Pike	2	0.3	0.3	100		0		87	3
	Walleye	26	4.2	2.2	48	16	12		85	2
	White Crappie	37	6.2	2.3	8		5		95	2
	Yellow Perch	15	2.5	1.4	0		0		91	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	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Avg
AFS std frame net	Black Bullhead			8.0								8.00
	Black Crappie			0.2								0.20
	Common Carp			1.3								1.30
	Northern Pike			0.1								0.10
	Smallmouth Bass			0.0								0.00
	Walleye			1.0								1.00
	White Crappie			0.9								0.90
	White Sucker			0.2								0.20
	Yellow Perch			0.1								0.10
AFS std gill net	Black Bullhead			18.8		6.5		3.0	4.0			8.08
	Channel Catfish			0.3		0.0		0.0	0.0			0.08
	Common Carp			23.0		9.5		4.5	12.0			12.25
	Northern Pike			1.3		1.0		0.5	1.0			0.95
	Walleye			1.8		0.5		0.0	0.5			0.70
	White Sucker			0.0		0.5		1.0	0.0			0.38
	Yellow Perch			0.3		0.0		0.0	0.0			0.08
boat shocker (day)	Walleye*								93.3			93.30
boat shocker (night)	Largemouth Bass										19.0	19.00
	Walleye*										72.0	72.00
frame net (std 3/4 in)	Black Bullhead	80.1				9.7		0.7	7.0	178.0	63.3	56.47
	Black Crappie	0.5				0.5		0.3	0.3	0.0	9.0	1.77
	Channel Catfish	0.0				0.0		0.0	0.0	0.0	0.3	0.05
	Common Carp	4.9				0.3		4.5	8.8	3.2	0.5	3.70
	Green Sunfish	0.0				0.3		0.2	0.0	0.0	1.2	0.28
	Northern Pike	0.5				0.2		1.0	3.5	1.2	0.3	1.12
	Walleye	1.0				1.7		1.2	2.0	0.0	4.2	1.68
	White Crappie	0.4				0.0		0.7	0.3	0.0	6.2	1.27
	White Sucker	0.1				0.0		0.5	0.5	0.0	0.0	0.18
	Yellow Perch	0.1				0.7		0.0	0.3	0.2	2.5	0.63
std exp gill net	Black Bullhead	23.5										23.50
	Common Carp	7.5										7.50
	Northern Pike	2.0										2.00
	Walleye	0.5										0.50

		CPUE										
Gear	Species	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Avg
std exp gill net	White Sucker	1.0										1.00

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			0							
		PSD-P			0							
		Wr			76							
	Black Crappie	PSD			50							
		PSD-P			50							
		Wr			107							
	Northern Pike	PSD			100							
		PSD-P			0							
		Wr			77							
	Walleye	PSD			60							
		PSD-P			30							
		Wr			76							
	White Crappie	PSD			100							
		PSD-P			0							
		Wr			97							
	Yellow Perch	PSD			100							
		PSD-P			0							
		Wr			88							
AFS std gill net	Black Bullhead	PSD			0		0		17	13		
		PSD-P			0		0		0	0		
		Wr			78		88		82	80		
	Channel Catfish	PSD			100							
		PSD-P			0							
		Wr			89							
	Northern Pike	PSD			100		100		100	100		
		PSD-P			60		100		0	0		
		Wr			81		91		93	79		
	Walleye	PSD			100		0			0		
		PSD-P			71		0			0		
		Wr			86		85			79		
	Yellow Perch	PSD			0							
		PSD-P			0							

			Year									
Gear	Species	Index	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
AFS std gill net	Yellow Perch	Wr			111							
boat shocker (day)	Walleye	PSD								38		
		PSD-P								2		
		Wr								90		
boat shocker (night)	Largemouth Bass	PSD										16
		PSD-P										0
		Wr										106
	Walleye	PSD										29
		PSD-P										9
		Wr										96
frame net (std 3/4 in)	Black Bullhead	PSD	0				0		0	11	2	2
		PSD-P	0				0		0	0	0	0
		Wr	77				88		82	75	88	79
	Black Crappie	PSD	100				100		0	100	0	41
		PSD-P	0				100		0	0	0	33
		Wr	98				92		108	107		100
	Channel Catfish	PSD										0
		PSD-P										0
		Wr										88
	Green Sunfish	PSD					0		0			0
		PSD-P					0		0			0
		Wr					116		77			117
	Northern Pike	PSD	100				100		83	100	100	100
		PSD-P	50				100		50	36	29	0
		Wr	84						87	83	86	87
	Walleye	PSD	63				20		100	25		48
		PSD-P	25				10		100	0		12
		Wr	87				82		86	85		85
	White Crappie	PSD	100						75	100		8
		PSD-P	100						0	100		5
		Wr	100						98	104		95
	Yellow Perch	PSD	0				100			0	100	0
		PSD-P	0				0			0	0	0
		Wr	95				92			95	80	91
std exp gill net	Black Bullhead	PSD	0									

			Year									
Gear	Species	Index	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
std exp gill net	Black Bullhead	PSD-P	0									
		Wr	89									
	Northern Pike	PSD	75									
		PSD-P	75									
		Wr	88									
	Walleye	PSD	0									
		PSD-P	0									
		Wr	80									

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+
2017	1					258 (1)					

Species: Walleye

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2017	7			423 (2)	585 (1)		585 (1)	605 (1)	613 (2)		

Species: White Crappie

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2017	9		200 (1)	227 (8)							

Fish Condition

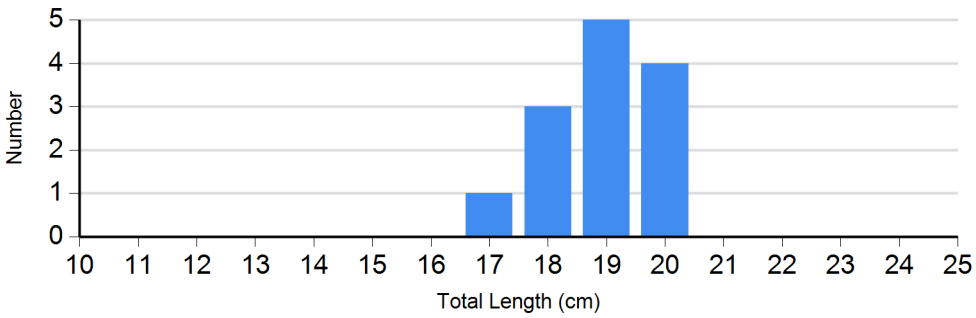
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Black Bullhead Gill Net	2021	5	82 (3.8)	1	83	0		0	
	2022	7	80 (0.9)	1	82	0		0	
Black Crappie Frame Net	2021	2	108 (1.1)	0		0		0	
	2022	0		1	107	0		0	
	2023	0		0		0		0	
	2024	32	109 (2.3)	4	93 (4.0)	17	89 (1.9)	1	94
Largemouth Bass Electro Fishing	2024	16	106 (2.6)	3	105 (4.7)	0		0	
Northern Pike Gill Net	2021	0		1	93	0		0	
	2022	0		2	79 (4.4)	0		0	
Walleye Gill Net	2022	1	79	0		0		0	
White Crappie Frame Net	2021	1	106	3	95 (2.8)	0		0	
	2022	0		0		0		1	104
	2024	34	95 (1.1)	1	78	0		2	96 (0.1)

Length Frequency Distribution

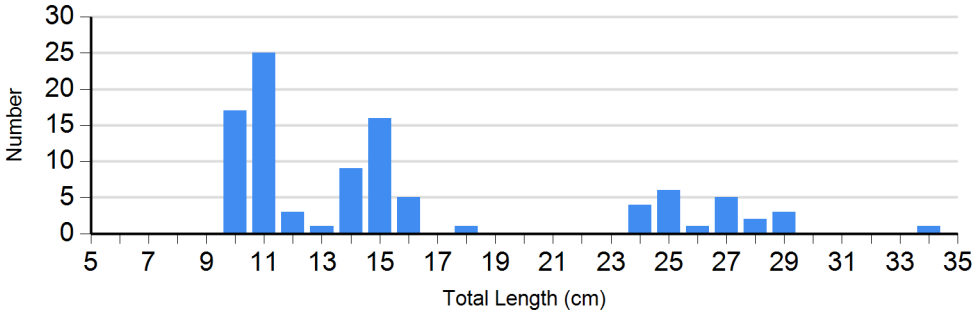
Length frequency histogram of species sampled by year.

Species: Black Bullhead
Gear: AFS std gill net



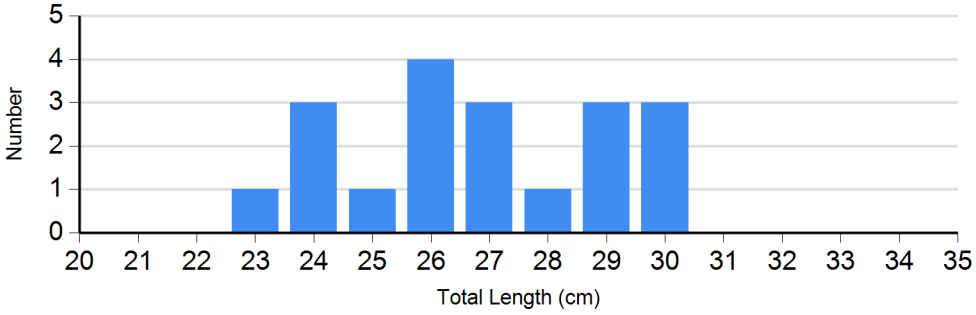
2019

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



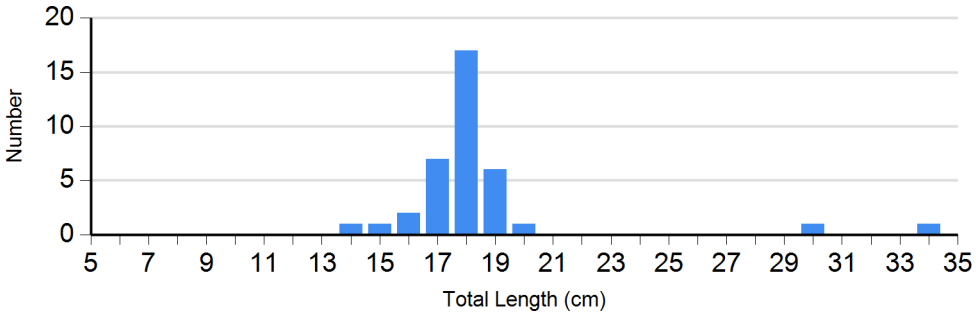
2024

Species: Largemouth Bass
Gear: boat shocker (night)



2024

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

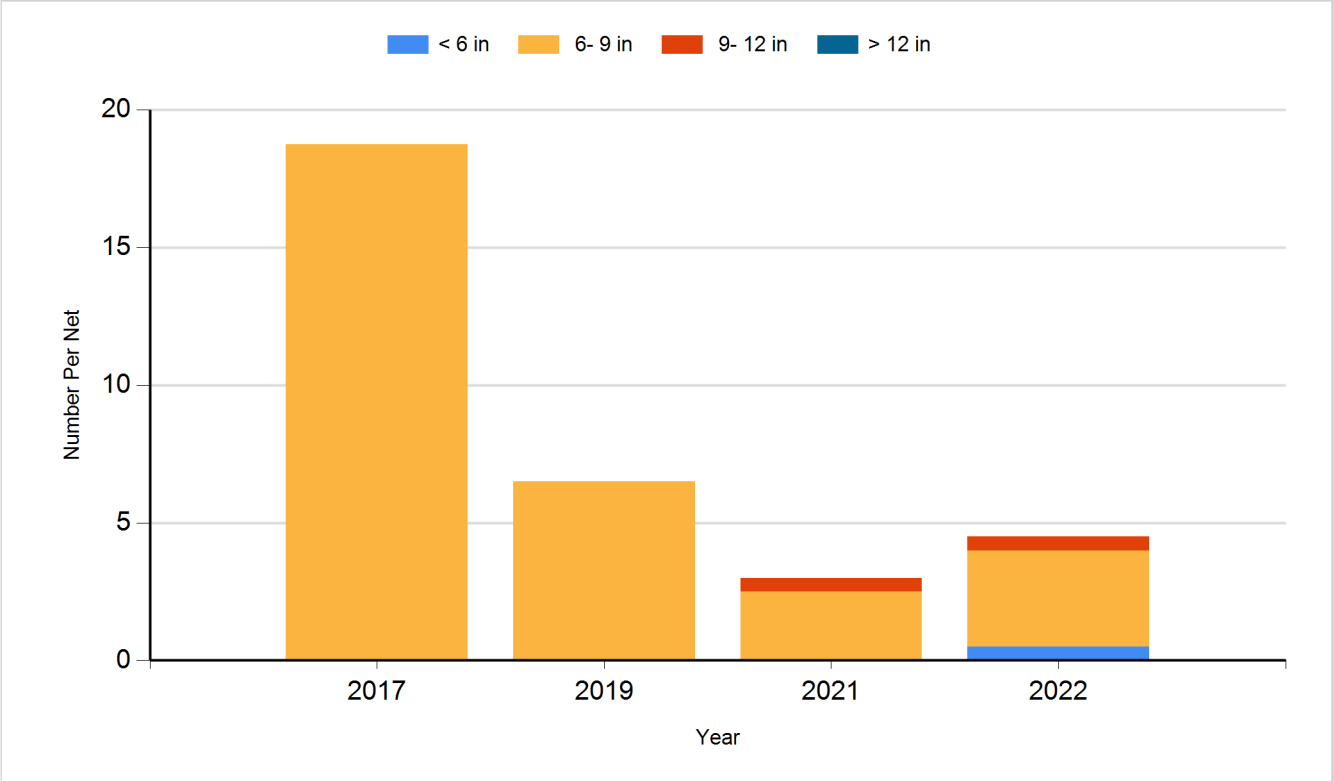


2024

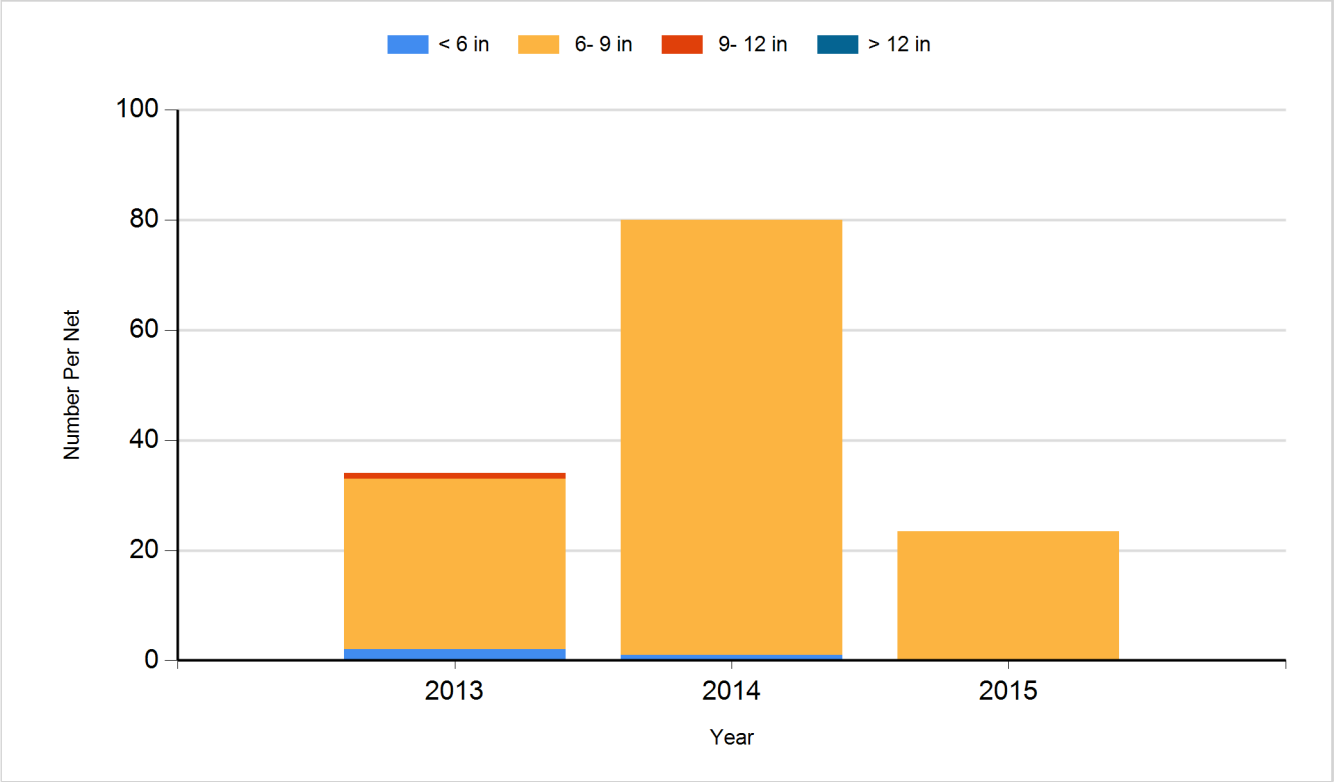
Historic Fish Sizes and Relative Abundance

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

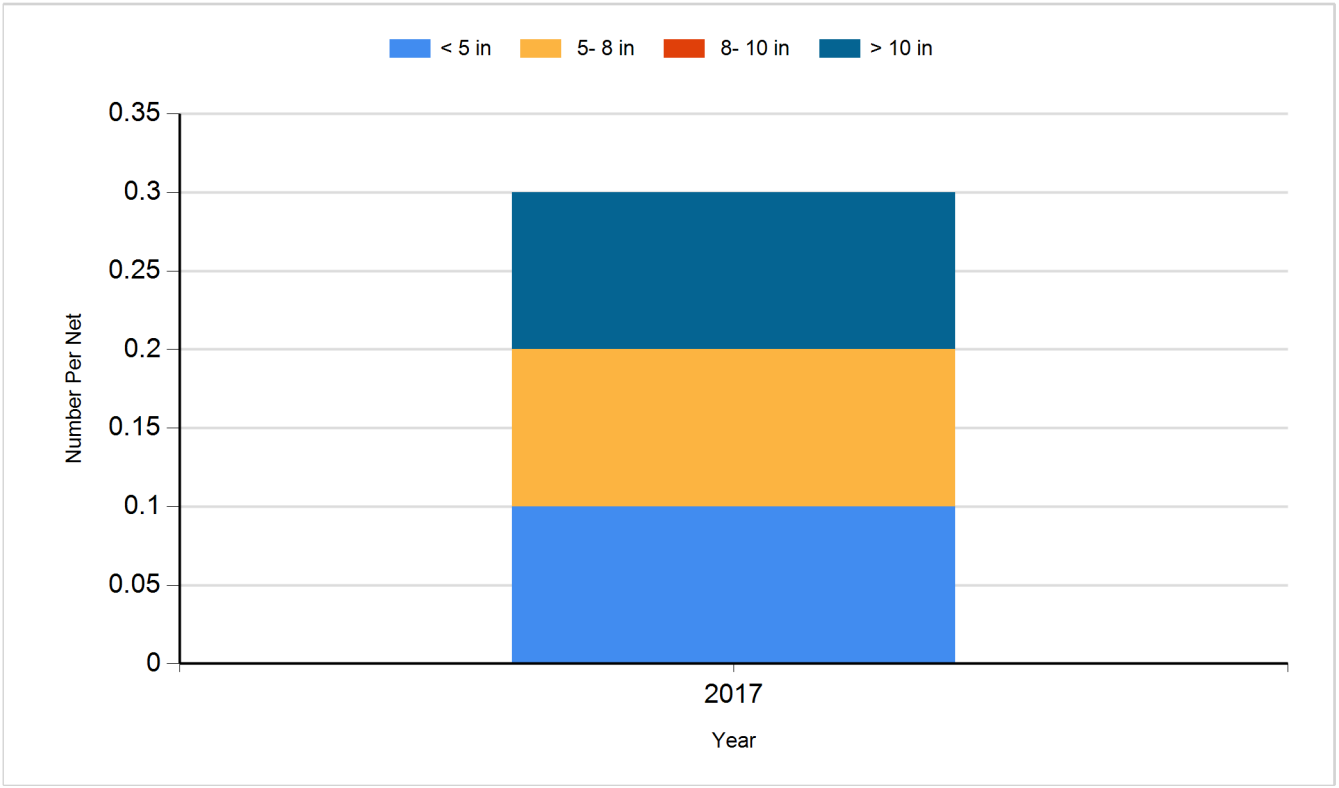
Species: Black Bullhead
Gear: AFS std gill net



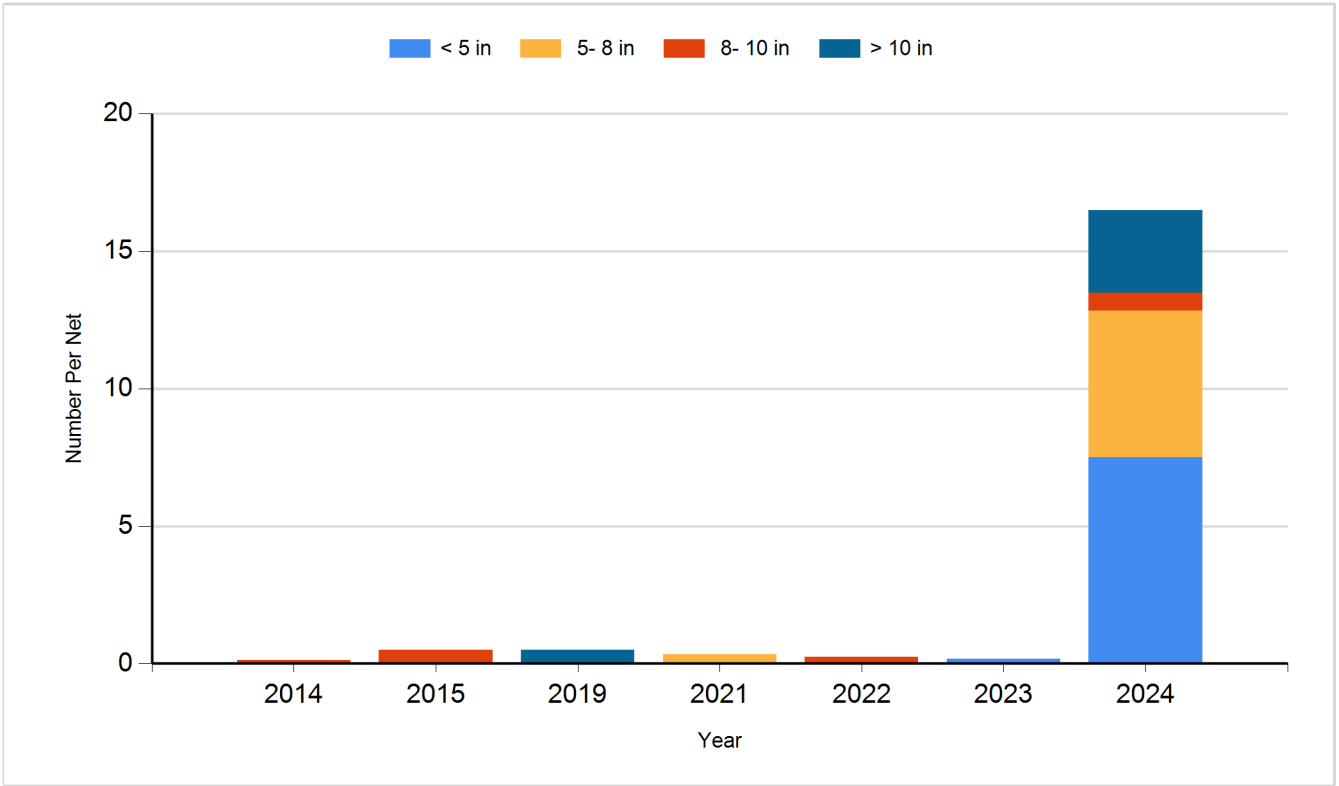
Species: Black Bullhead
Gear: std exp gill net



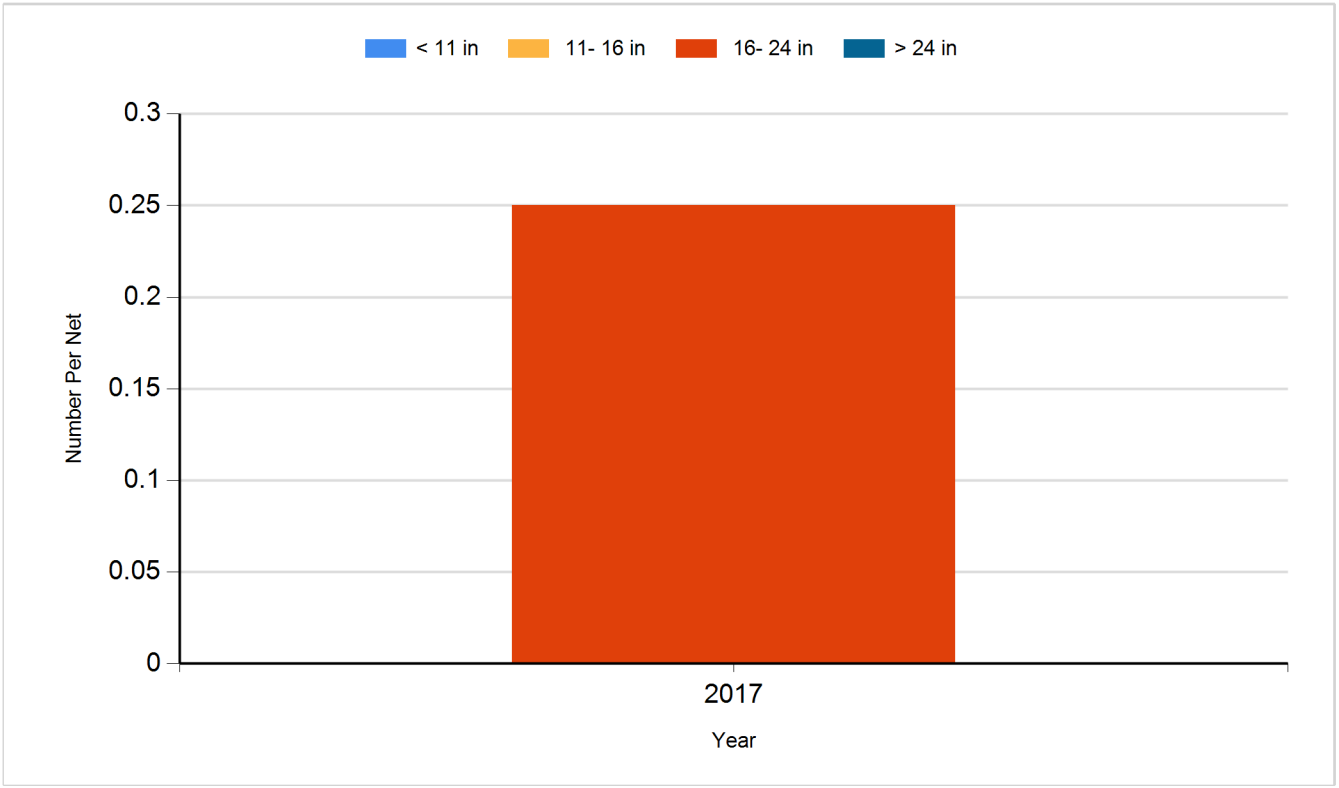
Species: Black Crappie
Gear: AFS std frame net



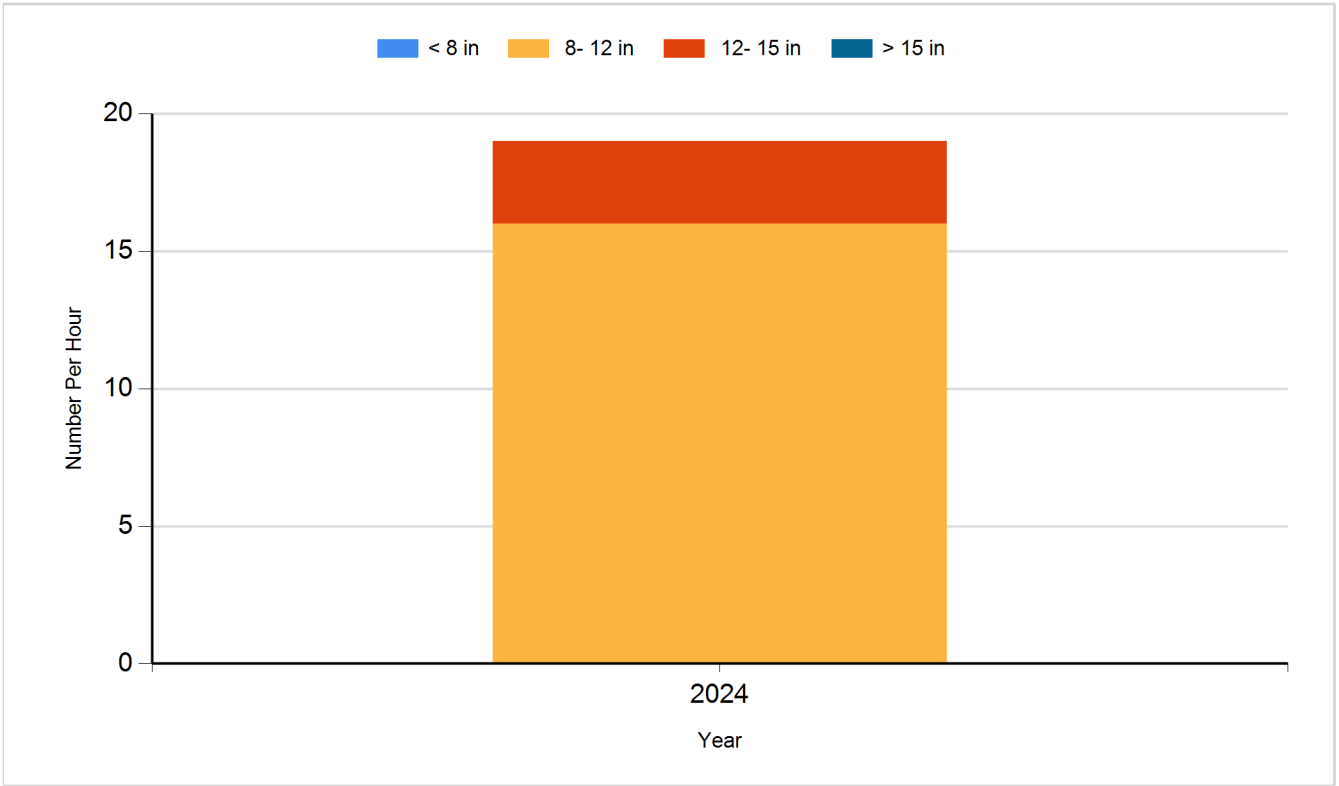
Species: Black Crappie
Gear: frame net (std 3/4 in)



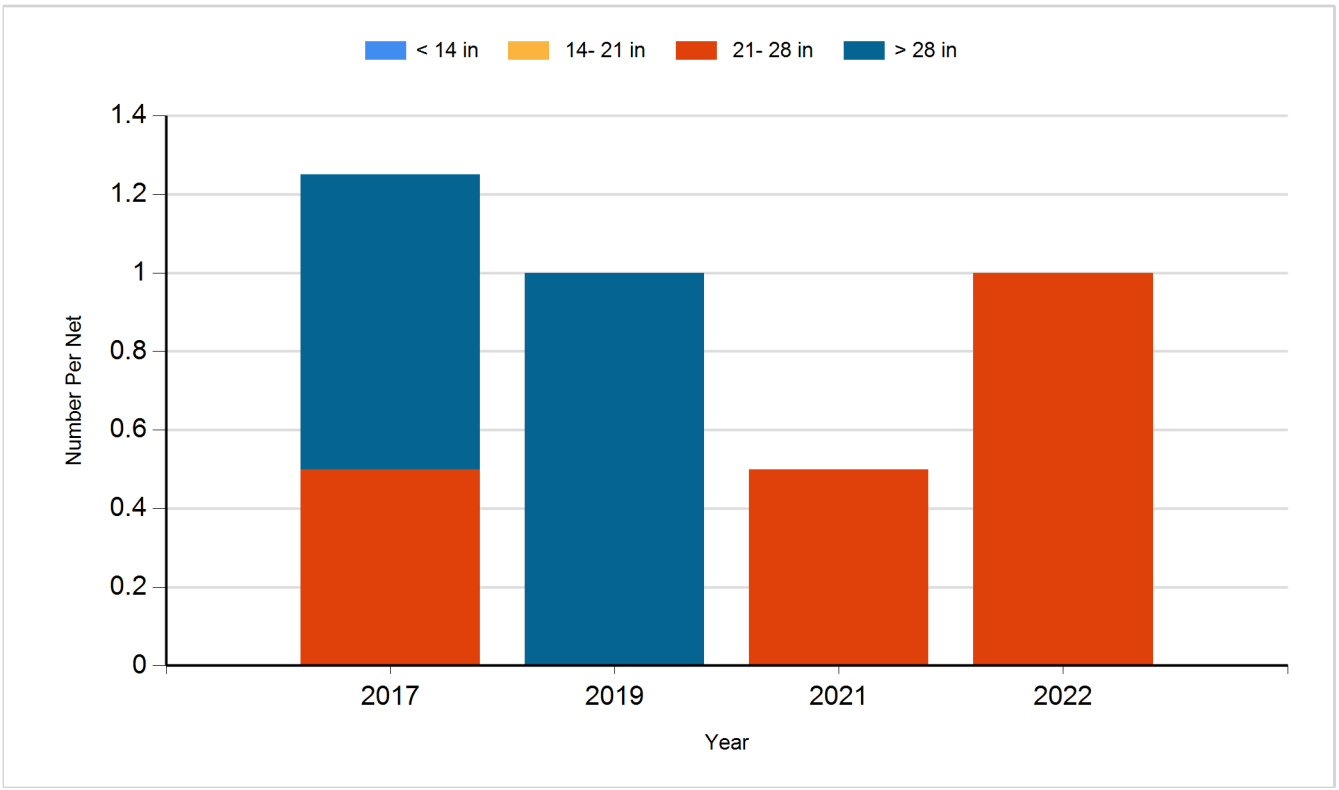
Species: Channel Catfish
Gear: AFS std gill net



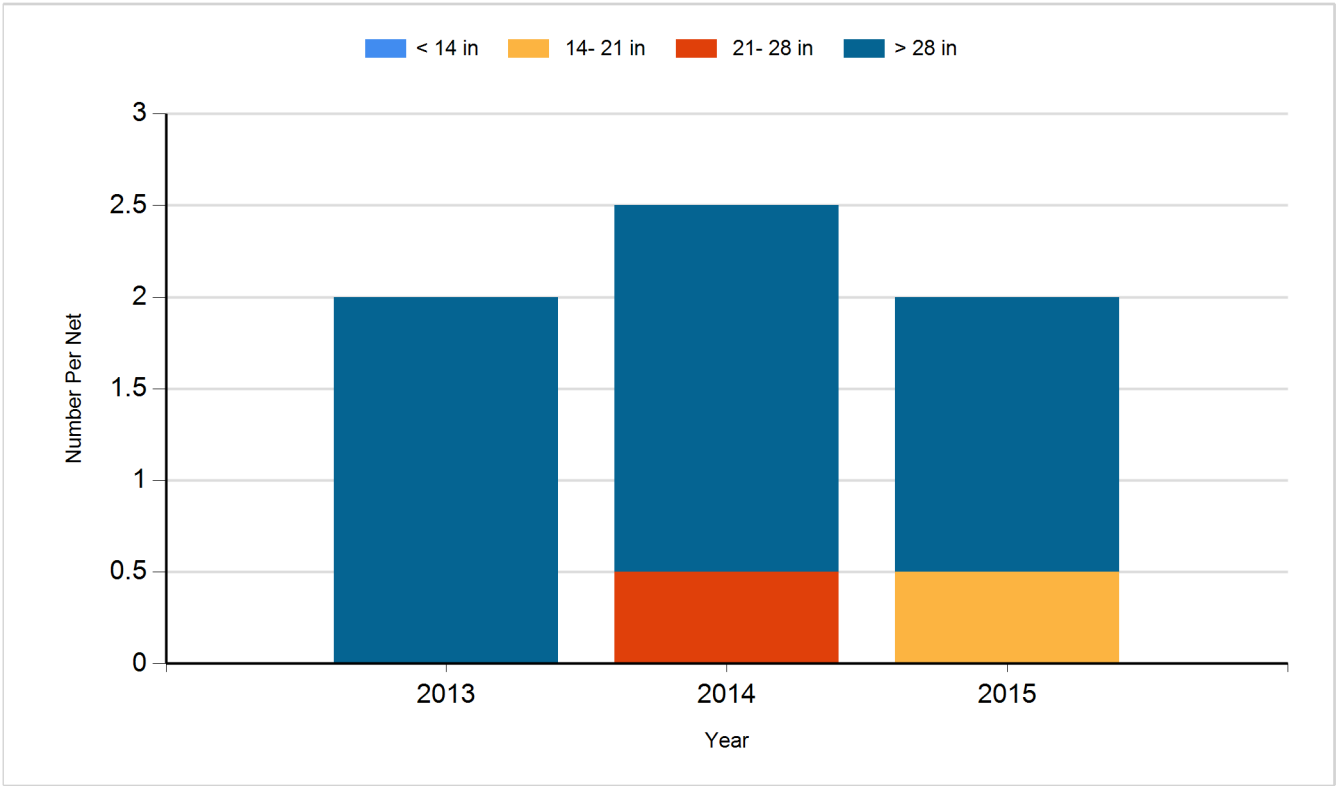
Species: Largemouth Bass
Gear: boat shocker (night)



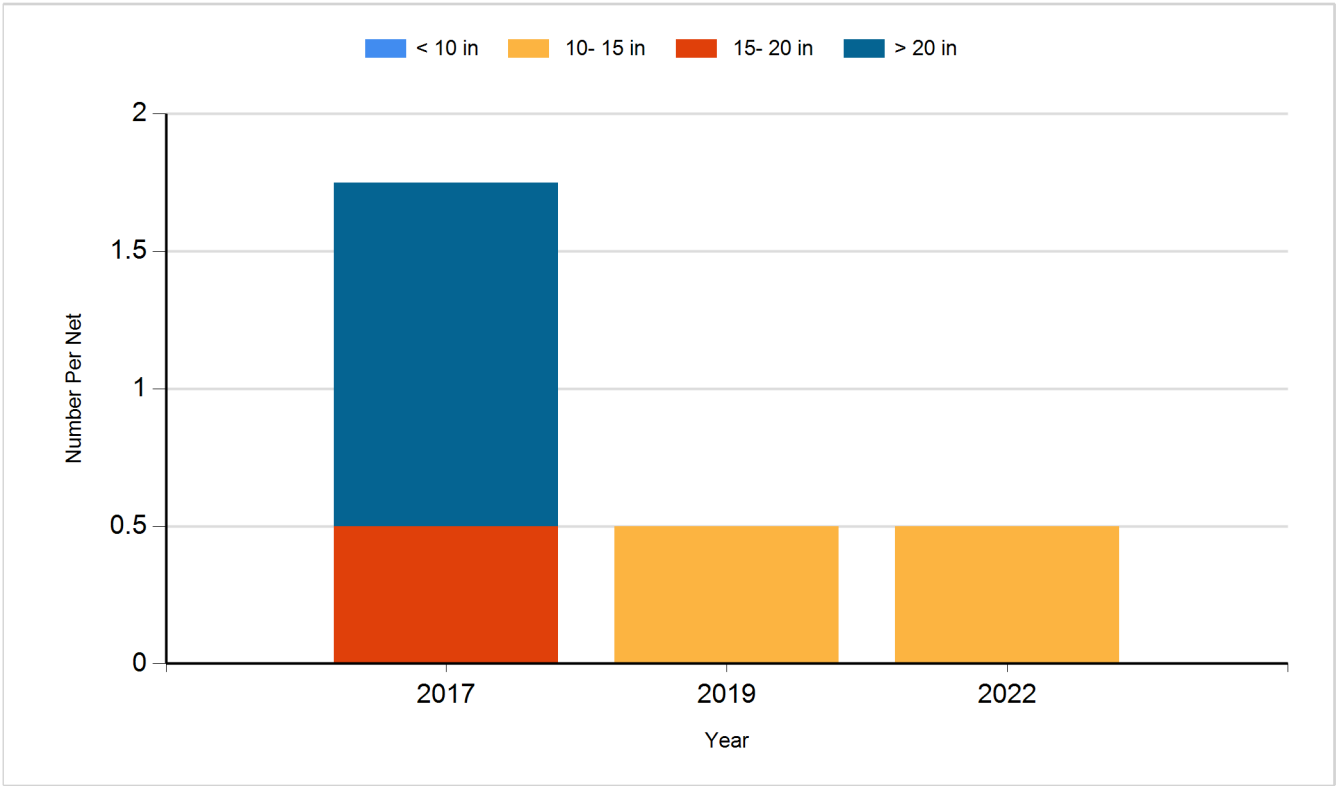
Species: Northern Pike
Gear: AFS std gill net



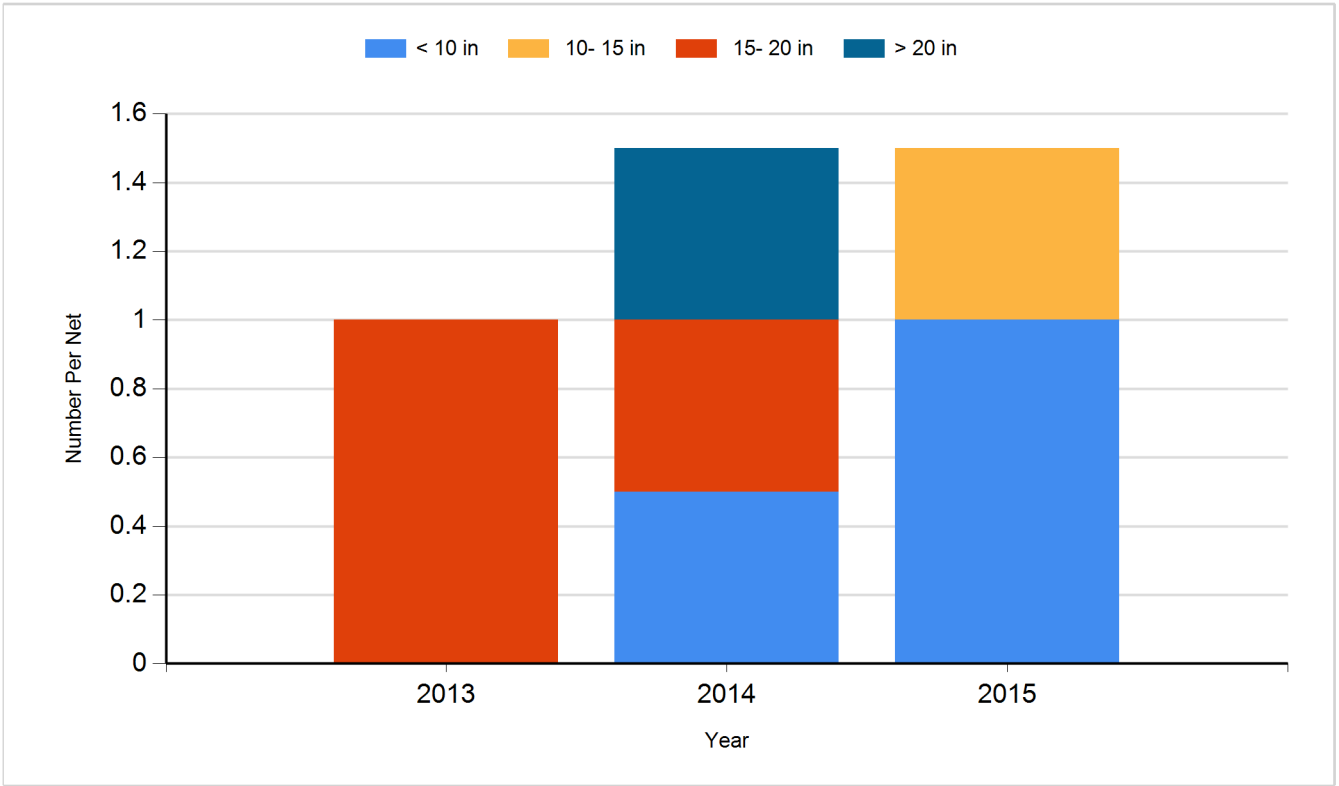
Species: Northern Pike
Gear: std exp gill net



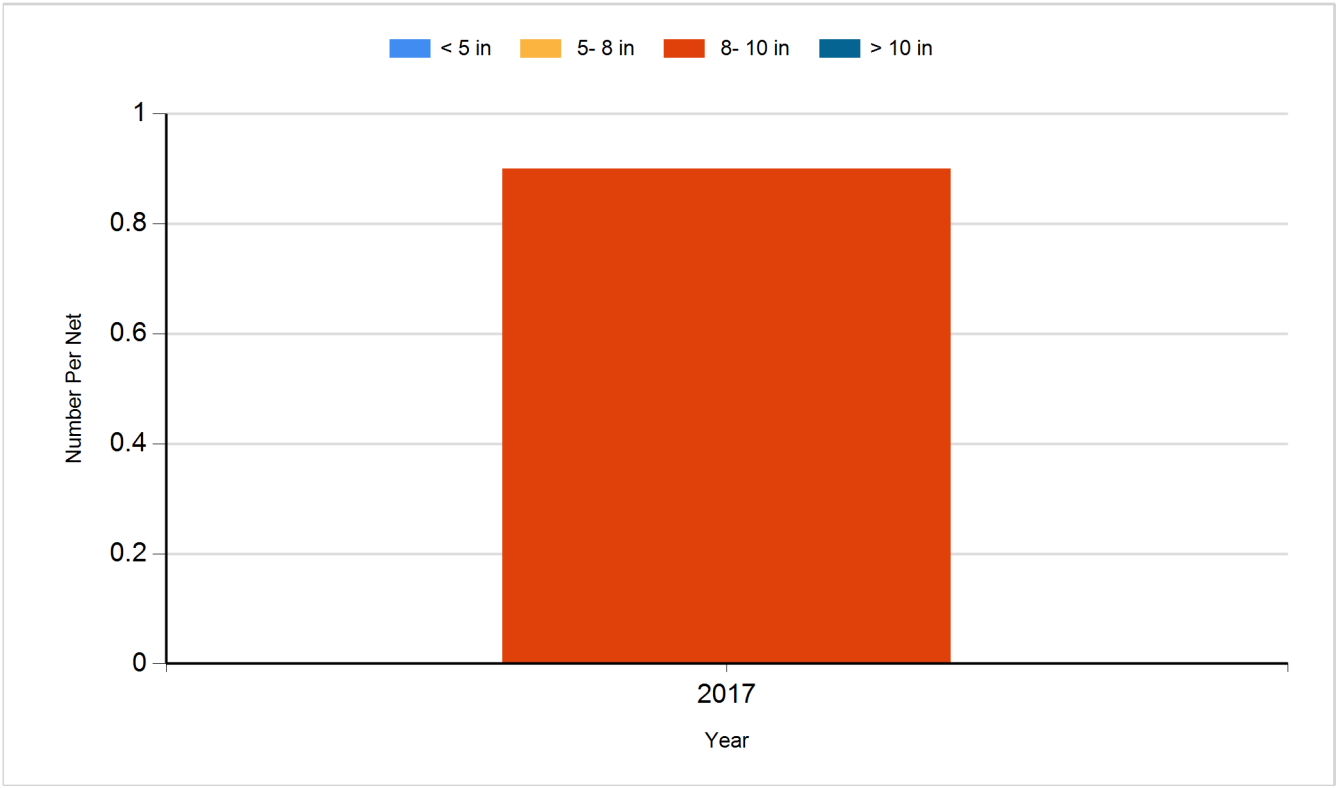
Species: Walleye
Gear: AFS std gill net



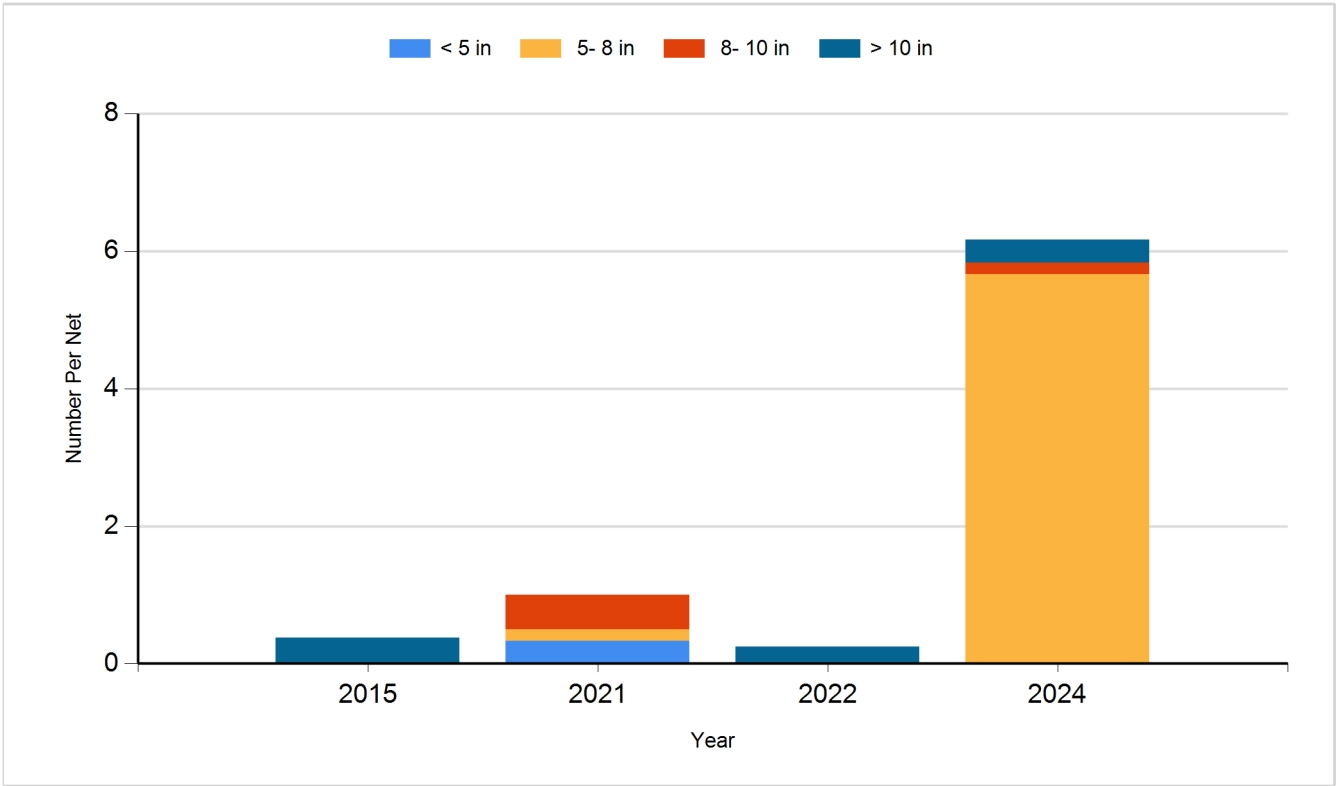
Species: Walleye
Gear: std exp gill net



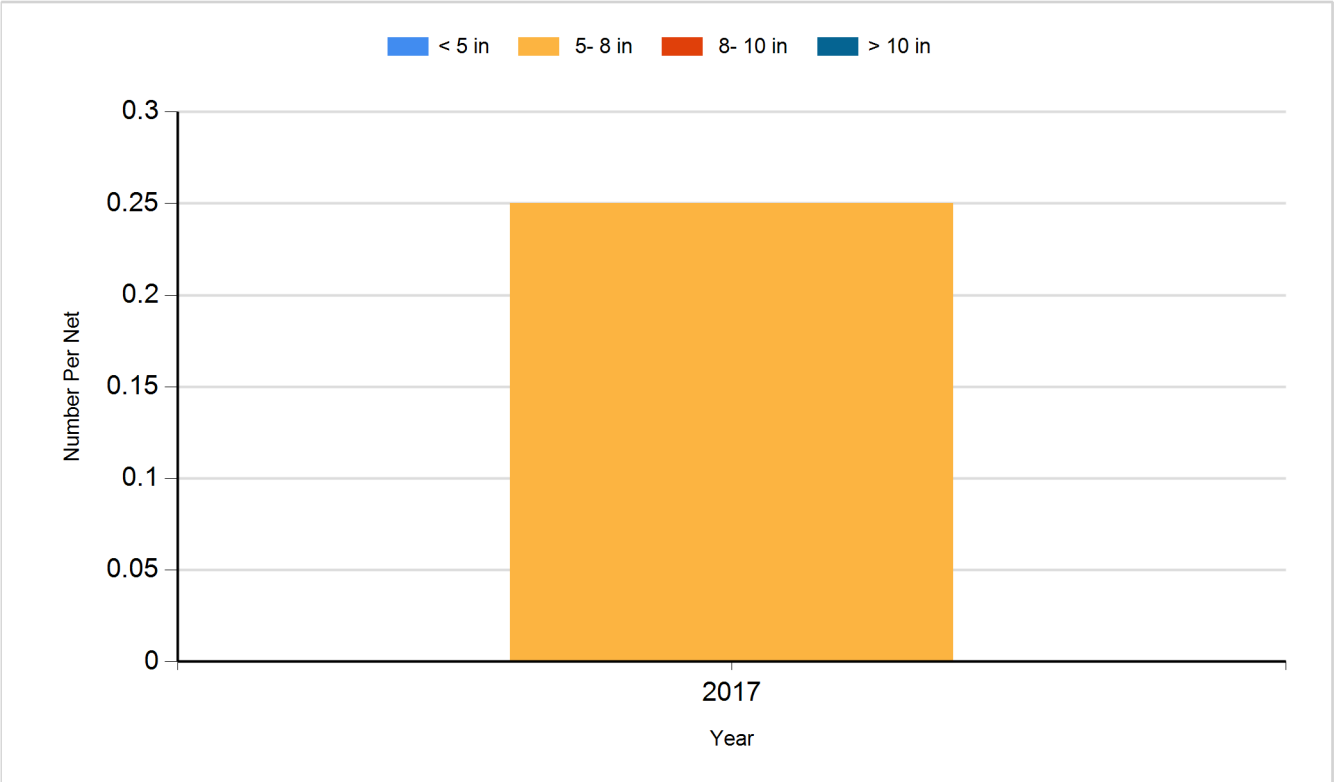
Species: White Crappie
Gear: AFS std frame net



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



Species: Yellow Perch
Gear: AFS std gill net



Fish Stocking

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

Year	Species	Size	Number
2013	Walleye	Large Fingerling	4,000
2014	Largemouth Bass	Adult	100
2014	Walleye	Small Fingerling	19,800
2016	Walleye	Fingerling	25,500
2017	Walleye	Small Fingerling	29,700
2018	Walleye	Small Fingerling	29,600
2019	Walleye	Small Fingerling	30,600
2021	Walleye	Juvenile	30,000
2022	Gizzard Shad	Adult	27
2022	Walleye	Juvenile	32,160
2023	Walleye	Juvenile	35,000
2024	Black Crappie	Adult	200
2024	Largemouth Bass		100
2024	Largemouth Bass	Adult	100
2024	Walleye	Juvenile	40,140
2024	Yellow Perch	Adult	500