East Lemmon Lake Survey

East Lemmon Lake is a 165-acre lake located 11 miles South and 7 miles East of Lemmon. The primary species found in this lake are Black Bullhead, Northern Pike and Yellow Perch. This lake's clear water leads to large amounts of vegetation, which can cause frequent winterkills as the plants die and decompose using up oxygen in the winter.

Black Bullhead. Black Bullheads comprised 97.4% of the entire number of fish sampled in the 2023 trap net survey, and 99.7% of the gill net survey. Bullhead size was very small on average, but there were some fish pushing 14 inches in the sample.

Largemouth bass. East Lemmon was stocked with 200 small adult bass to try to establish another predator in the lake. October electrofishing sampled three fish.

Northern Pike. Pike numbers were very low in the survey with 3 fish sampled in the frame nets and none in the gill nets.

Yellow Perch. Perch numbers remain low with only 3 fish sampled in the entire survey.

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Lemmon East, Perkins County
GRA-Lake-392-000
2024

Lake Information

Name: Lemmon East

County: Perkins

Surface Area: 162 Acres

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jul 31, 2024	2 net-nights
frame net (std 3/4 in)	Jul 31, 2024	4 net-nights

Common Fish Species Present

Yellow Perch

Northern Pike

Largemouth Bass

Black Bullhead

Bluegill

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	Black Bullhead	318	155.5	7.7	41	4	9	2	94	1
	Yellow Perch	1	0.5	1.5	100		0		107	
frame net (std 3/4 in)	Black Bullhead	473	76.8	50.9	67	4	9	2		
	Bluegill	8	2.0	1.9	38		0		145	10
	Northern Pike	3	0.8	0.8	100		0		84	5
	Yellow Perch	2	0.5	0.8	50		0		109	9

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			0.8								0.80
	Bluegill			0.5								0.50
	Largemouth Bass			0.2								0.20
	Northern Pike			0.4								0.40
	White Sucker			0.2								0.20
	Yellow Perch			0.2								0.20
AFS std gill net	Black Bullhead			41.8	14.0	5.5	4.0	54.0		52.0	155.5	46.69
	Largemouth Bass			0.5	0.0	0.0	0.0	0.0		0.0	0.0	0.07
	Northern Pike			3.0	1.5	2.5	3.0	1.5		2.5	0.0	2.00
	White Sucker			0.3	0.0	0.0	0.0	0.0		0.0	0.0	0.04
	Yellow Perch			0.8	0.5	1.5	0.0	0.5		0.0	0.5	0.54
frame net (std 3/4 in)	Black Bullhead	40.0			5.0	13.3	151.2	17.3	52.8	114.0	76.8	58.80
	Black Crappie	0.0			0.0	0.0	0.0	0.3	0.0	0.2	0.0	0.06
	Bluegill	0.0			0.0	0.0	0.2	0.8	0.2	0.0	2.0	0.40
	Golden Shiner	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
	Largemouth Bass	0.0			0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.03
	Northern Pike	0.3			0.7	0.6	2.2	1.3	0.6	1.0	0.8	0.94
	Smallmouth Bass	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
	Walleye	0.0			0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.01
	White Sucker	0.5			0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.09
	Yellow Perch	0.6			0.3	0.4	0.2	0.0	0.0	1.0	0.5	0.38
std exp gill net	Black Bullhead	24.0										24.00
	Golden Shiner	0.0										0.00
	Largemouth Bass	3.5										3.50
	Northern Pike	11.0										11.00
	White Sucker	1.0										1.00
	Yellow Perch	21.5										21.50

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			100							
		PSD-P			100							
		Wr			97							
	Bluegill	PSD			100							
		PSD-P			40							
		Wr			218							
	Largemouth Bass	PSD			100							
		PSD-P			50							
		Wr			94							
	Northern Pike	PSD			25							
		PSD-P			25							
		Wr			87							
	Yellow Perch	PSD			100							
		PSD-P			100							
		Wr			99							
AFS std gill net	Black Bullhead	PSD			100	100	100	88	89		46	41
		PSD-P			89	96	100	50	13		35	9
		Wr			102	97	110	101	102		103	94
	Largemouth Bass	PSD			50							
		PSD-P			0							
		Wr			113							
	Northern Pike	PSD			92	100	100	83	100		100	
		PSD-P			58	33	40	0	33		80	
		Wr			91	91	84	102	92		92	
	Yellow Perch	PSD			100	100	100		100			100
		PSD-P			67	100	100		100			0
		Wr			106	83	99		113			107
frame net (std 3/4 in)	Black Bullhead	PSD	97			100	100	11	96	63	63	67
		PSD-P	3			100	100	1	14	7	9	9
		Wr	91			89	90	93		96		
	Bluegill	PSD						100	60	100		38
		PSD-P						100	60	0		0

			Year									
Gear	Species	Index	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
frame net (std 3/4 in)	Bluegill	Wr						112	134	135		145
	Largemouth Bass	PSD							100			
		PSD-P							0			
		Wr							106			
	Northern Pike	PSD	0			50	100	92	50	67	60	100
		PSD-P	0			0	80	0	0	67	20	0
		Wr				90	89	93	83	88	90	84
	Yellow Perch	PSD	100			50	33	100			0	50
		PSD-P	60			50	0	100			0	0
		Wr	113			99	89	88			108	109
std exp gill net	Black Bullhead	PSD	94									
		PSD-P	4									
		Wr	97									
	Largemouth Bass	PSD	0									
		PSD-P	0									
		Wr	109									
	Northern Pike	PSD	36									
		PSD-P	36									
		Wr	100									
	Yellow Perch	PSD	84									
		PSD-P	60									
		Wr	112									

Fish Condition

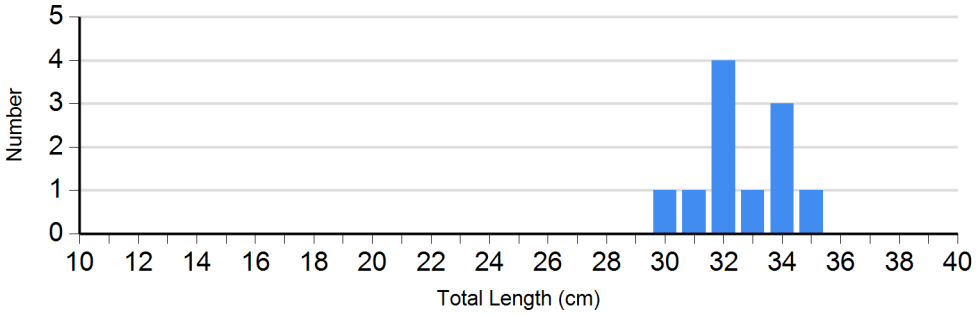
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2020	1	92	3	109 (3.1)	4	97 (6.4)	0	
	2021	12	100 (1.9)	82	103 (1.0)	13	98 (2.1)	1	
	2023	56	101 (1.4)	12	110 (1.5)	36	103 (1.6)	0	
	2024	184	94 (0.7)	98	93 (1.0)	29	97 (1.0)	0	
Bluegill Frame Net	2020	0		0		1	112	0	
	2021	2	131 (9.3)	0		3	137 (8.1)	0	
	2022	0		1	135	0		0	
	2024	5	153 (9.9)	3	132 (9.2)	0		0	
Northern Pike Gill Net	2020	1	100	5	102 (2.0)	0		0	
	2021	0		2	94 (1.9)	1	87	0	
	2023	0		1	96	2	87 (10.9)	2	97
Yellow Perch Gill Net	2021	0		0		1	113	0	
	2024	0		1	107	0		0	

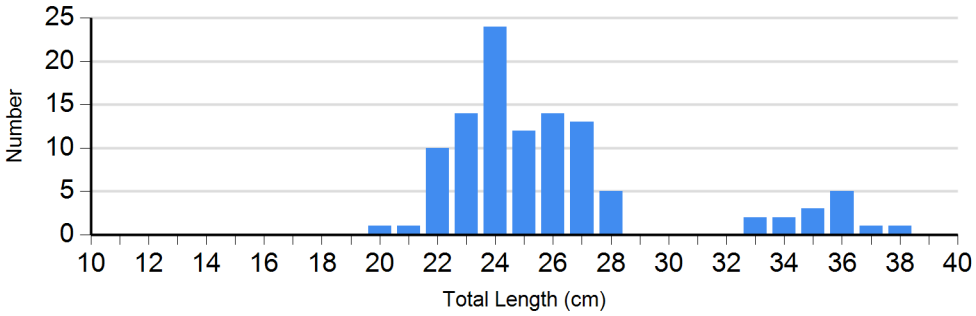
Length Frequency Distribution

Length frequency histogram of species sampled by year.

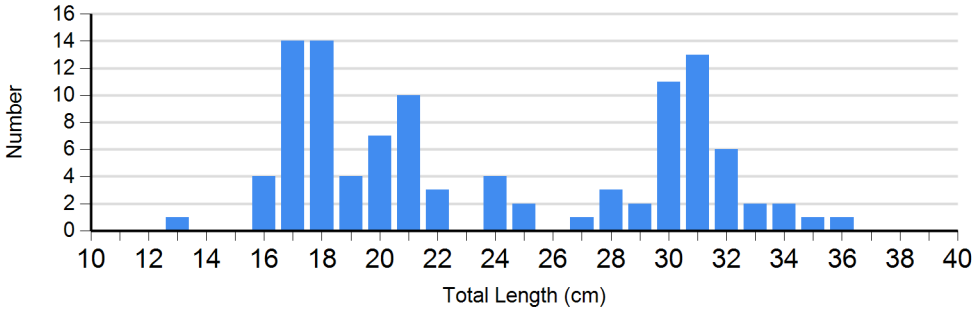
Species: Black Bullhead
Gear: AFS std gill net



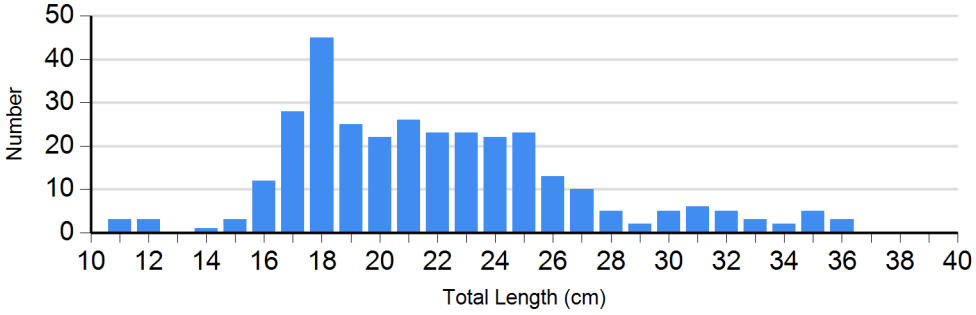
2019



2021

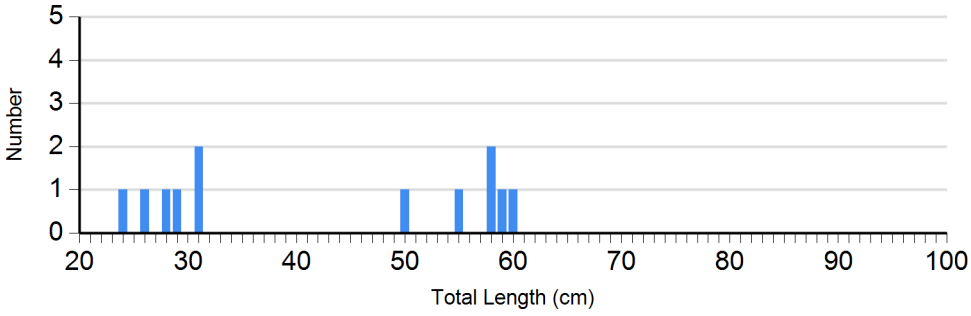


2023



2024

Species: Northern Pike
Gear: AFS std gill net

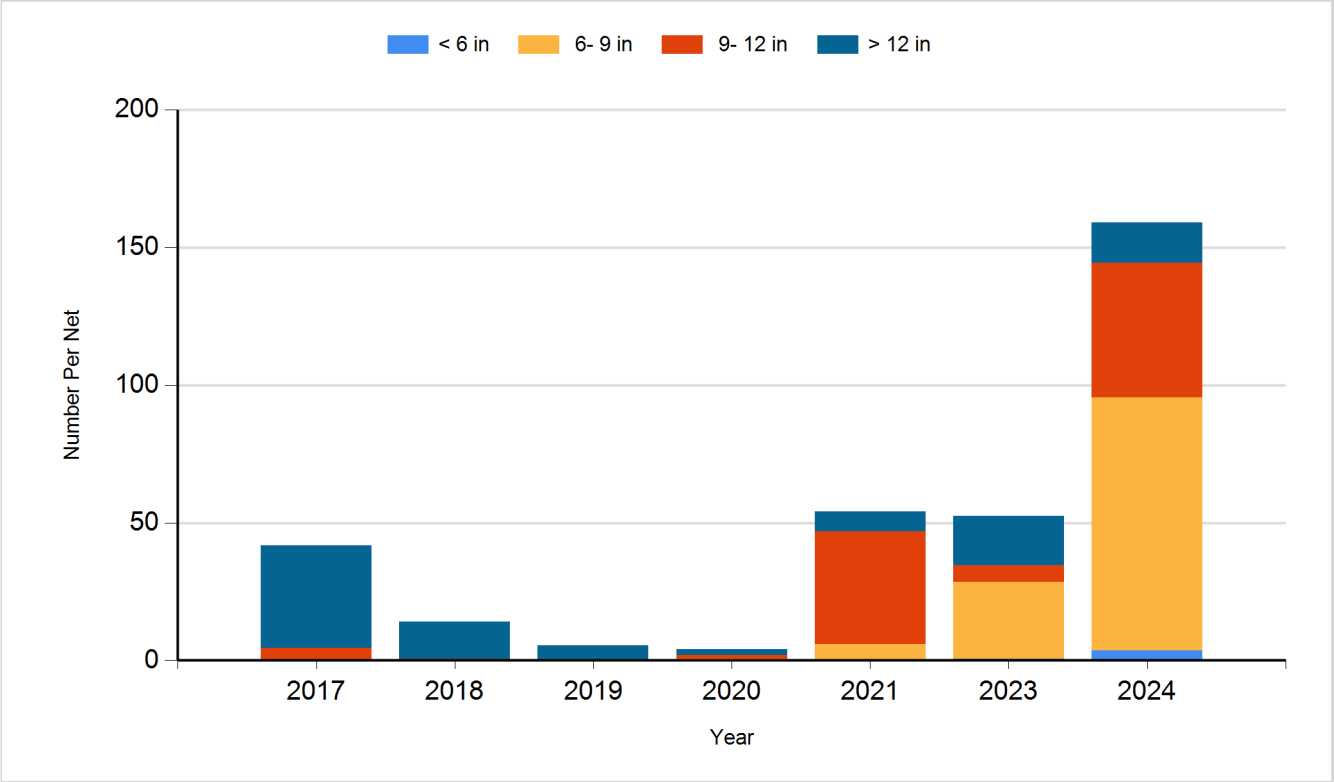


2020

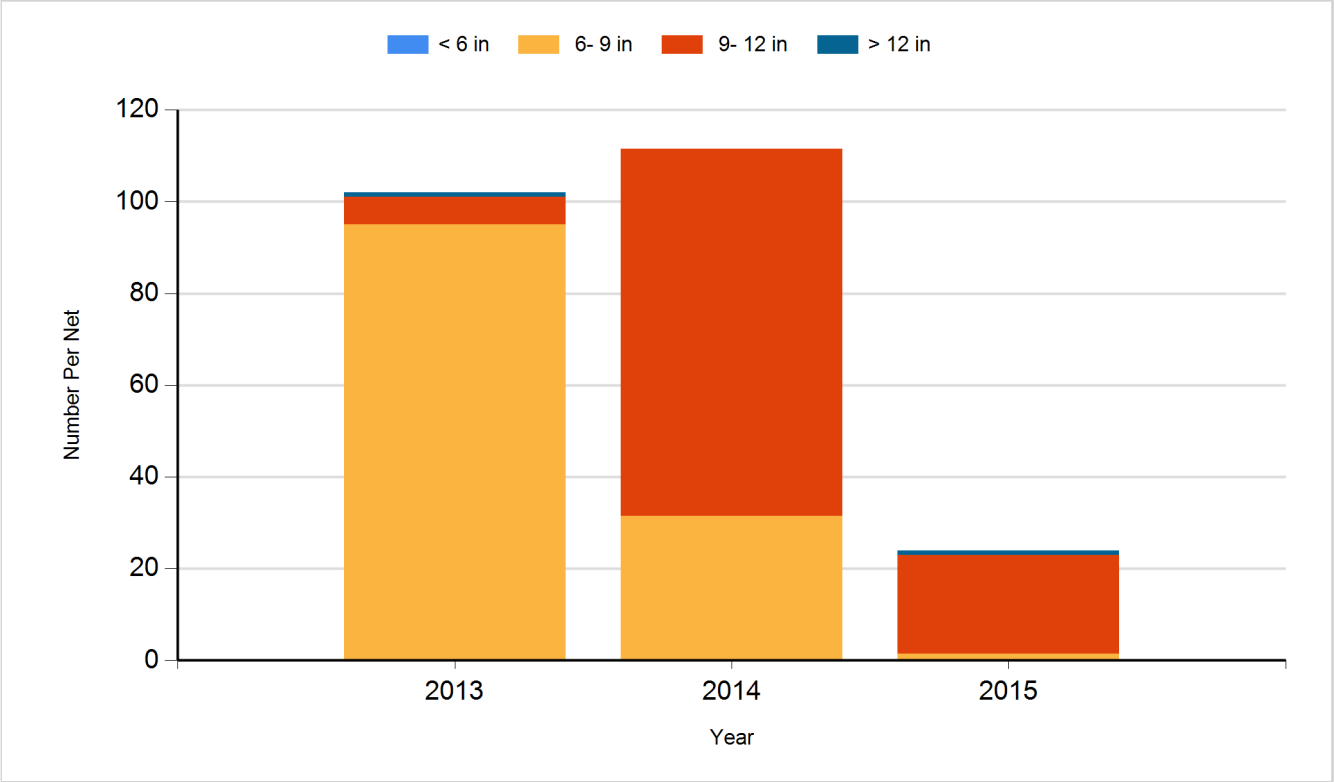
Historic Fish Sizes and Relative Abundance

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

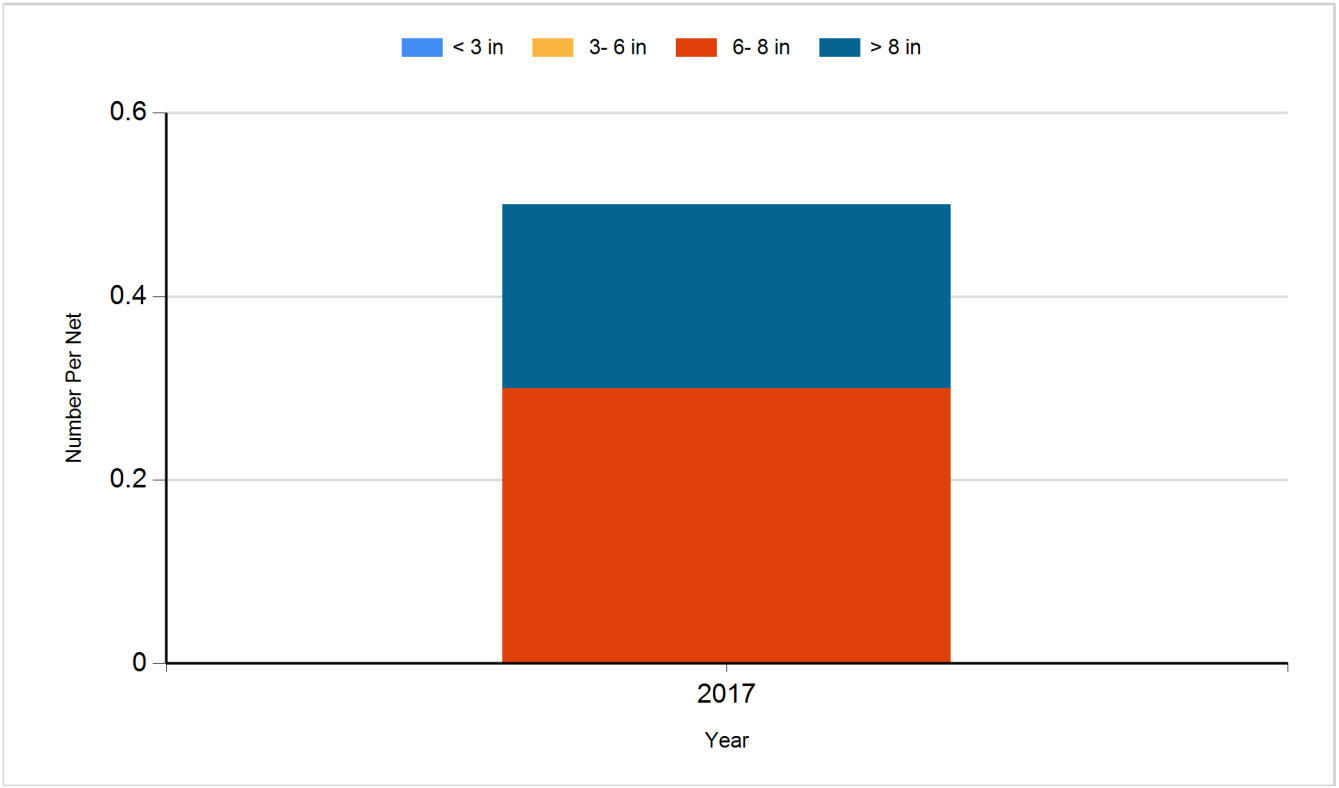
Species: Black Bullhead
Gear: AFS std gill net



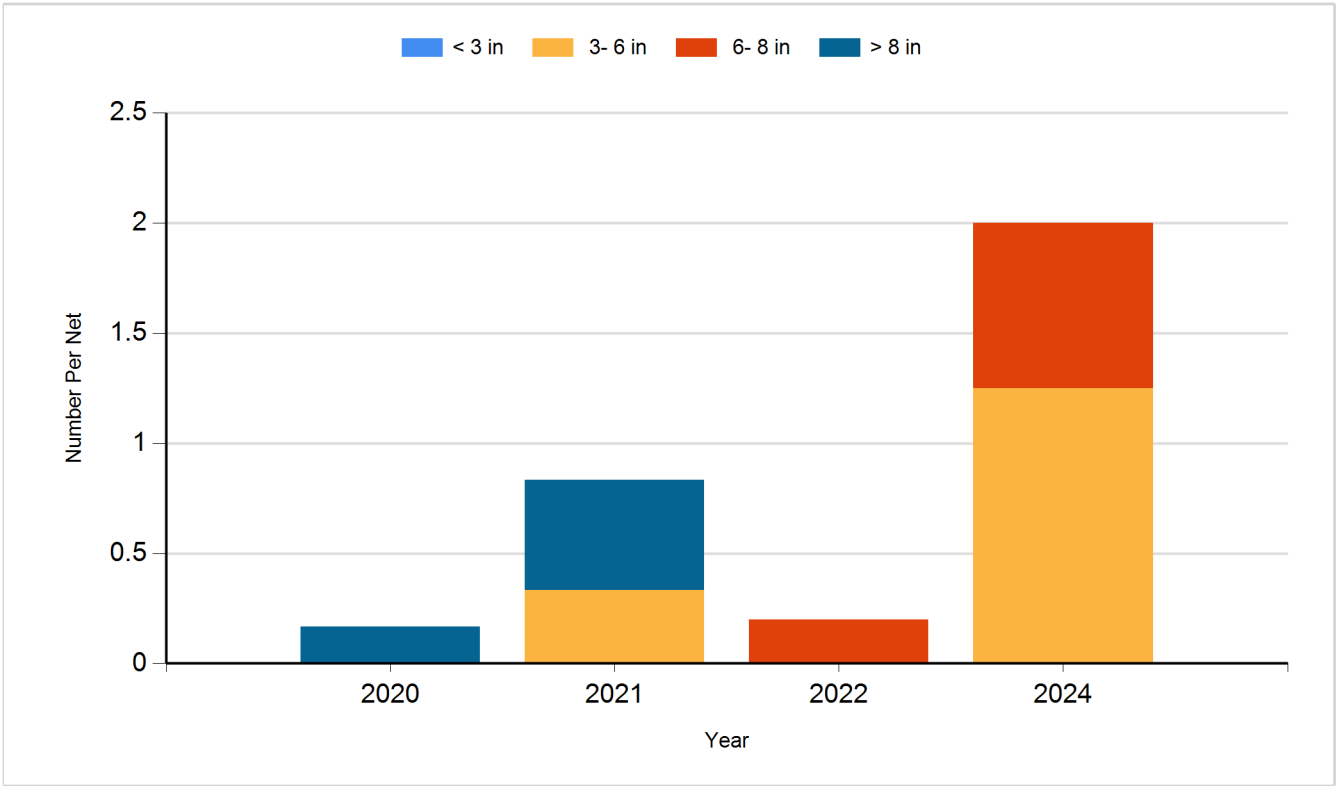
Species: Black Bullhead
Gear: std exp gill net



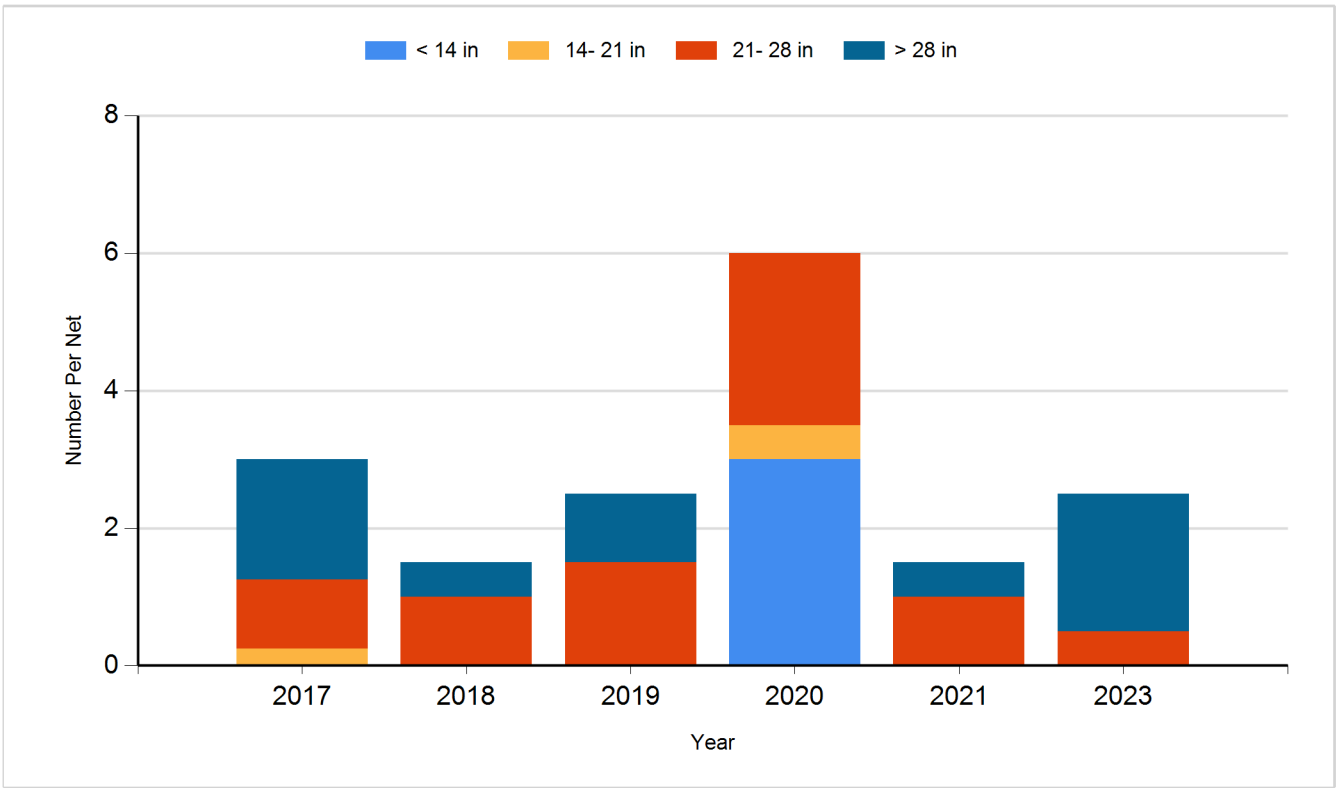
Species: Bluegill
Gear: AFS std frame net



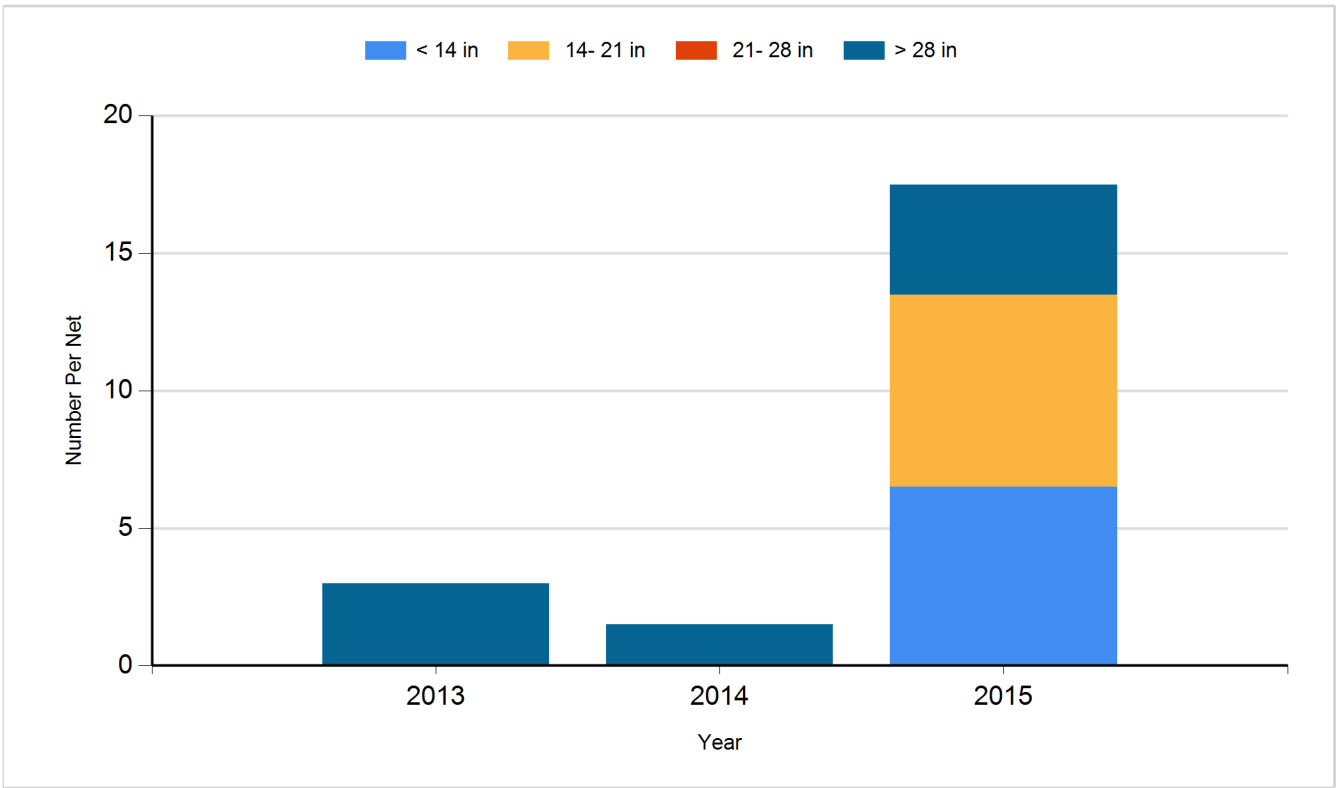
Species: Bluegill
Gear: frame net (std 3/4 in)



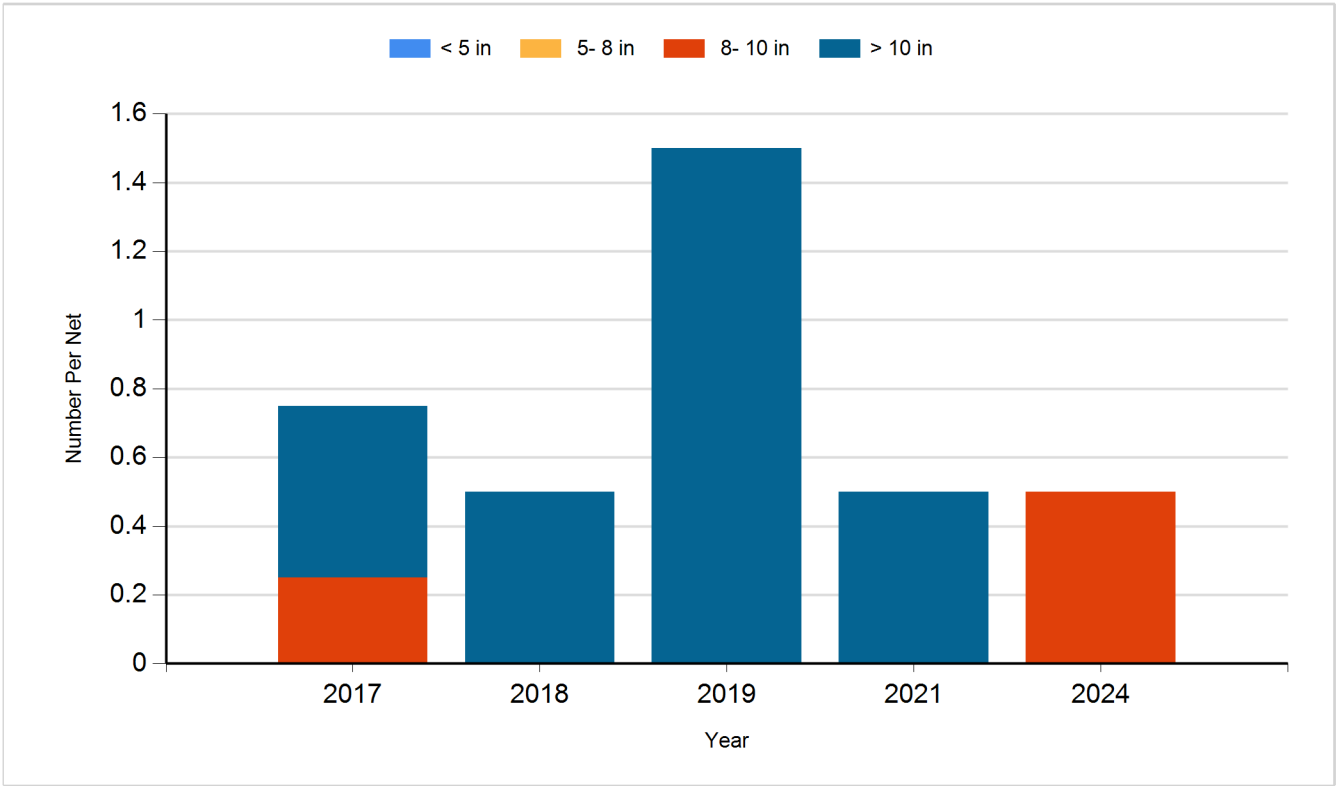
Species: Northern Pike
Gear: AFS std gill net



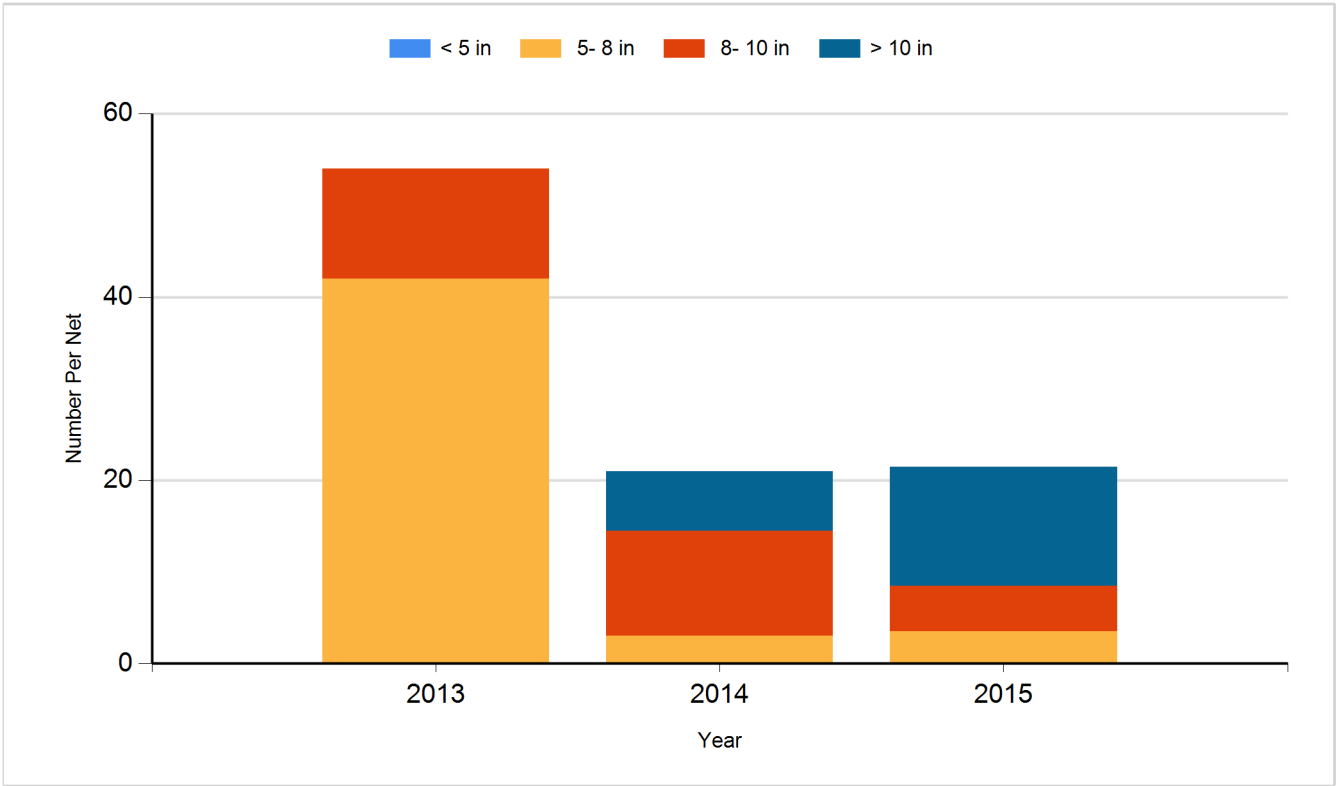
Species: Northern Pike
Gear: std exp gill net



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
2016	Bluegill	Adult	600
2019	Black Crappie	Adult	35
2019	Bluegill	Adult	67
2019	Largemouth Bass	Fingerling	1,500
2019	Northern Pike	Adult	50
2019	Yellow Perch	Adult	350
2020	Largemouth Bass	Small Fingerling	10,950
2021	Yellow Perch	Adult	1,100
2022	Bluegill	Juvenile	4,260
2022	Yellow Perch	Adult	1,000
2024	Largemouth Bass		100
2024	Largemouth Bass	Adult	100
2024	Yellow Perch	Adult	500