SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

Twin, Sanborn County

LJA-Lake-290-000

2021

Lake Information

Name:	Twin	**Maximum Depth:**	13 Feet
County:	Sanborn	**Mean Depth:**	6 Feet
Legal Description:	T106N-R62W-Sec.30-31; T106-R63-Sec. 24-25		
Surface Area:	233 Acres		

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jun 07, 2021	4 net-nights

Common Fish Species Present

Northern Pike

Black Crappie

Black Bullhead

Saugeye

Common Carp

Bigmouth Buffalo

Shortnose Gar

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	3	0.8	1.2	0		0			
	Black Bullhead	493	123.3	21.9	72	3	0			
	Common Carp	5	1.3	1.0	80		0			
	Northern Pike	7	1.8	0.8	100		0		81	4
	Saugeye	8	2.0	2.0	75		38		99	3
	Shortnose Gar	17	0.0	0.0						

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										0.8	0.80
	Black Bullhead										123.3	123.30
	Common Carp										1.3	1.30
	Northern Pike										1.8	1.80
	Saugeye										2.0	2.00
	Shortnose Gar										0.0	0.00
frame net (std 3/4 in)	Bigmouth Buffalo		2.2	0.0	0.0	0.0						0.55
	Black Bullhead		518.4	50.2	1.2	14.6						146.10
	Black Crappie		0.0	0.0	0.0	0.0						0.00
	Bluegill		0.0	0.0	0.0	0.0						0.00
	Common Carp		1.2	0.0	0.0	0.6						0.45
	Largemouth Bass		0.0	0.0	0.0	0.0						0.00
	Northern Pike		11.6	0.8	6.6	2.0						5.25
	Shortnose Gar		0.0	0.0	0.0	0.0						0.00
	Smallmouth Bass		0.2	0.0	0.0	0.0						0.05
	Walleye		0.0	0.0	0.0	0.2						0.05
	White Sucker		0.8	0.0	0.0	0.0						0.20
std exp gill net	Bigmouth Buffalo		10.0	0.0	0.0	0.0						2.50
	Black Bullhead		10.0	4.3	1.3	0.3						3.98
	Black Crappie		0.0	0.0	0.0	0.0						0.00
	Common Carp		0.0	0.0	0.0	0.0						0.00
	Northern Pike		3.7	7.0	3.0	3.7						4.35
	Orangespotted Sunfish		0.0	0.0	0.0	0.0						0.00
	Smallmouth Bass		0.0	0.0	0.0	0.3						0.08
	Walleye		0.0	0.0	0.3	0.0						0.08
	White Sucker		0.0	0.0	0.0	0.0						0.00

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	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
AFS std gill net	Bigmouth Buffalo	PSD										0
		PSD-P										0
	Black Bullhead	PSD										72
		PSD-P										0
	Common Carp	PSD										80
		PSD-P										0
	Northern Pike	PSD										100
		PSD-P										0
		Wr										81
	Saugeye	PSD										75
		PSD-P										38
		Wr										99
frame net (std 3/4 in)	Bigmouth Buffalo	PSD		27								
		PSD-P		0								
		Wr		102								
	Black Bullhead	PSD		48	0	100	19					
		PSD-P		0	0	0	15					
		Wr		77								
	Common Carp	PSD		17			0					
		PSD-P		0			0					
		Wr		96								
	Northern Pike	PSD		45	50	97	100					
		PSD-P		2	0	27	50					
		Wr		66	84	86	88					
std exp gill net	Bigmouth Buffalo	PSD		0								
		PSD-P		0								
		Wr		104								
	Black Bullhead	PSD		60	0	100	0					
		PSD-P		0	0	0	0					
		Wr		90								
	Northern Pike	PSD		82	86	89	100					
		PSD-P		18	5	0	55					

			Year									
Gear	Species	Index	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
std exp gill net	Northern Pike	Wr		80	87	100	88					

Fish Condition

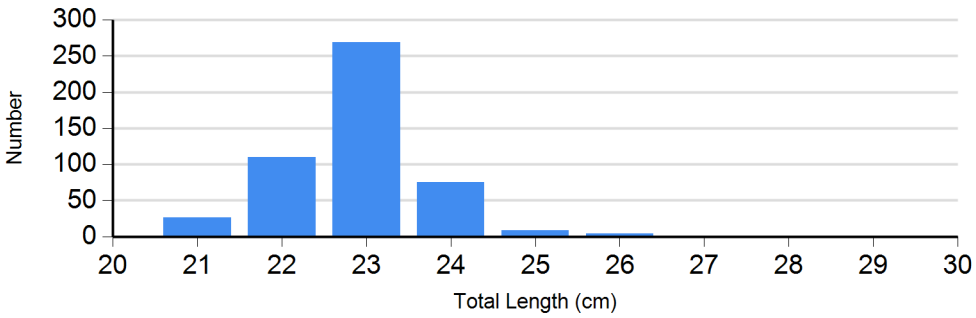
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2021	0		7	81 (3.4)	0		0	
Saugeye Gill Net	2021	2	103 (1.1)	3	99 (2.4)	2	100 (0.2)	1	87

Length Frequency Distribution

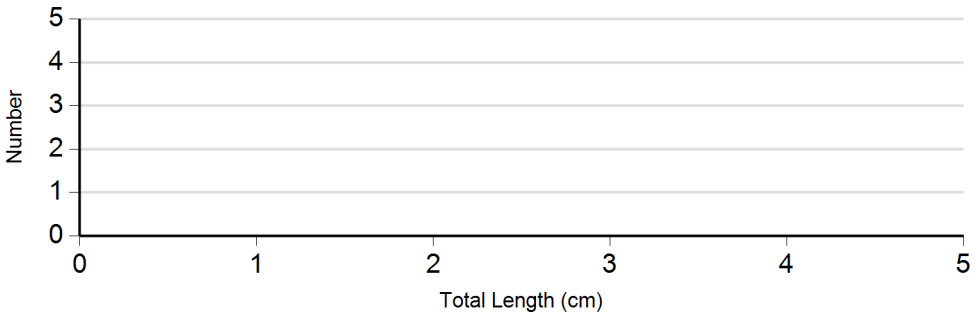
Length frequency histogram of species sampled by year.

Species: Black Bullhead
Gear: AFS std gill net



2021

Species: Northern Pike
Gear: std exp gill net

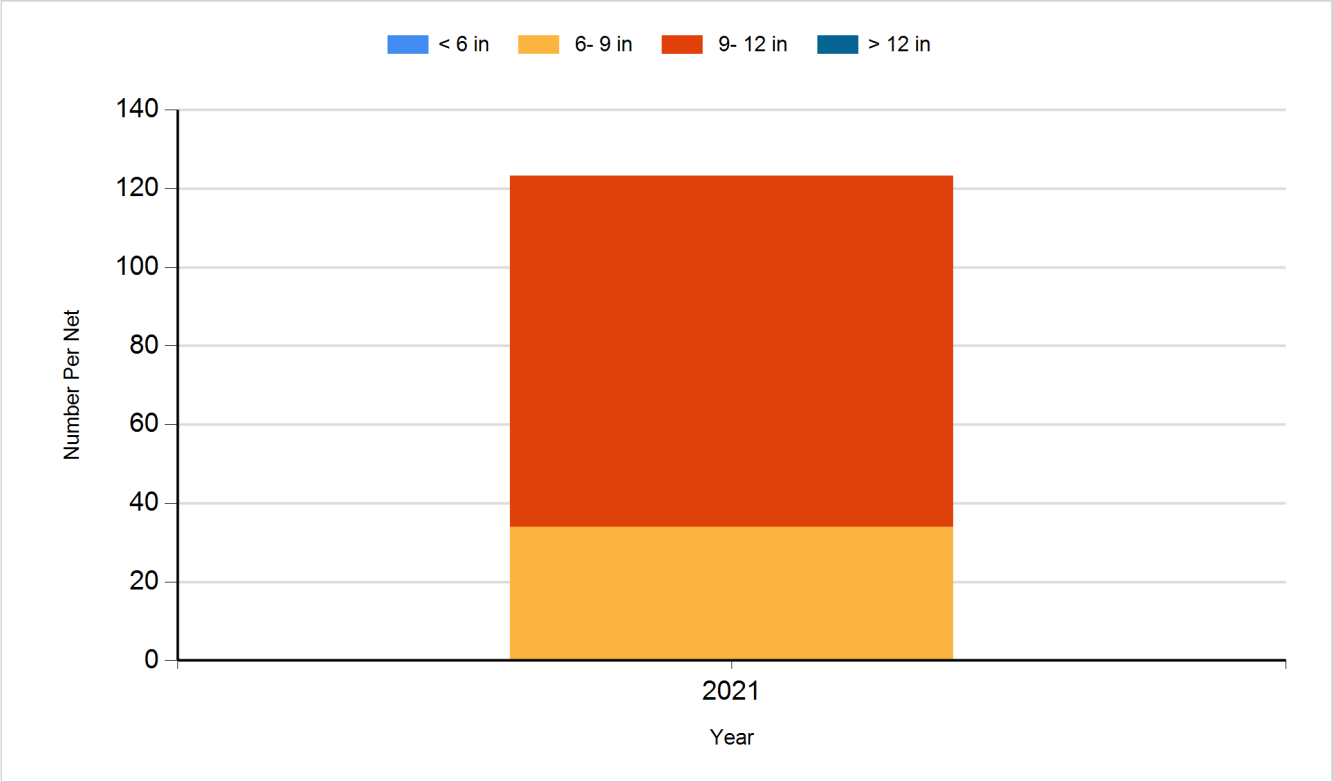


2016

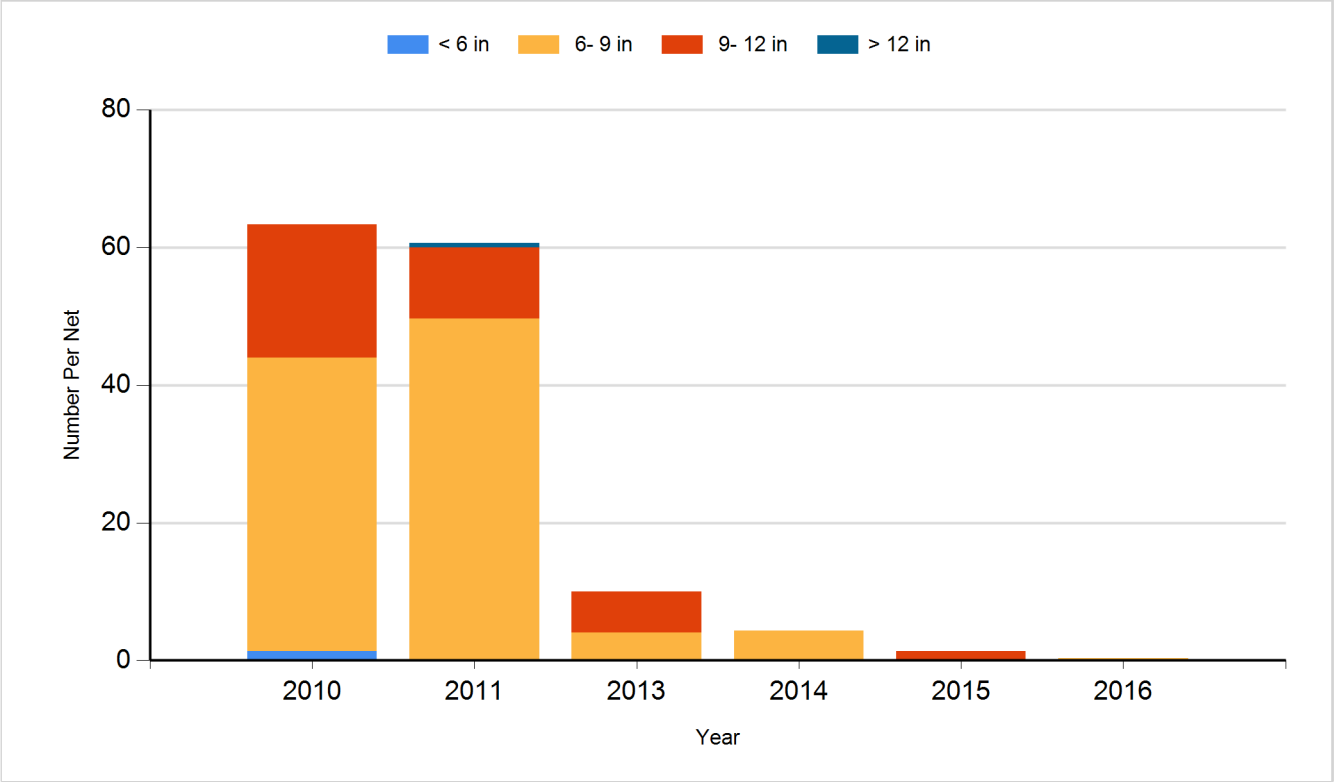
Historic Fish Sizes and Relative Abundance

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

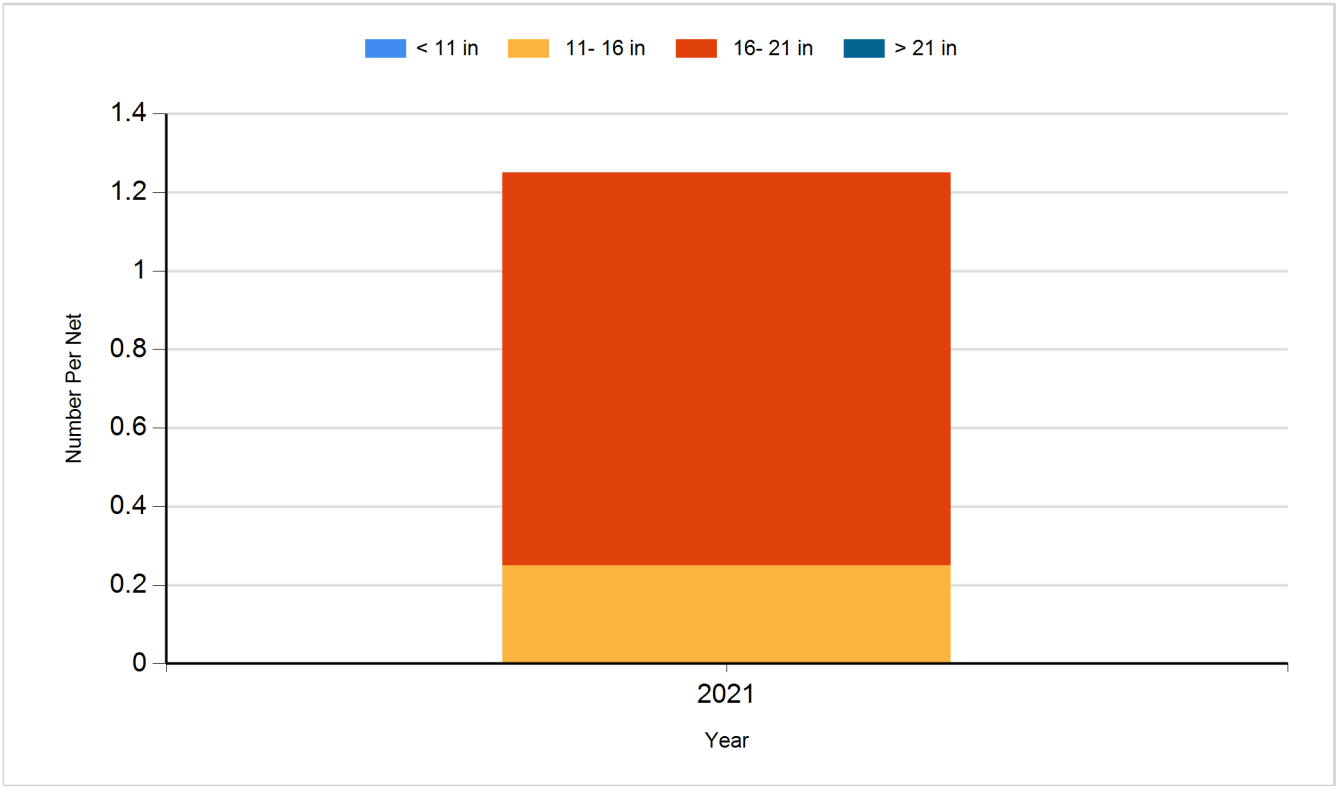
Species: Black Bullhead
Gear: AFS std gill net



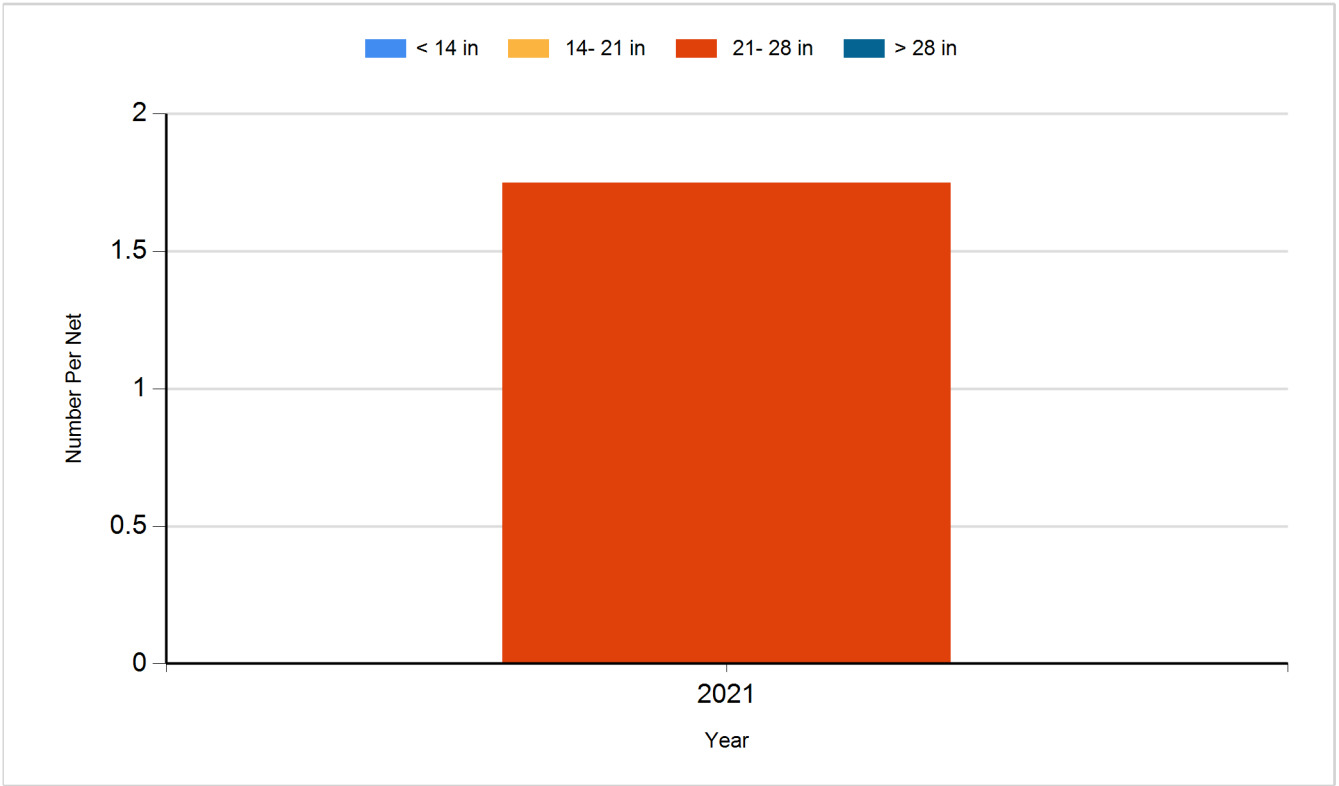
Species: Black Bullhead
Gear: std exp gill net



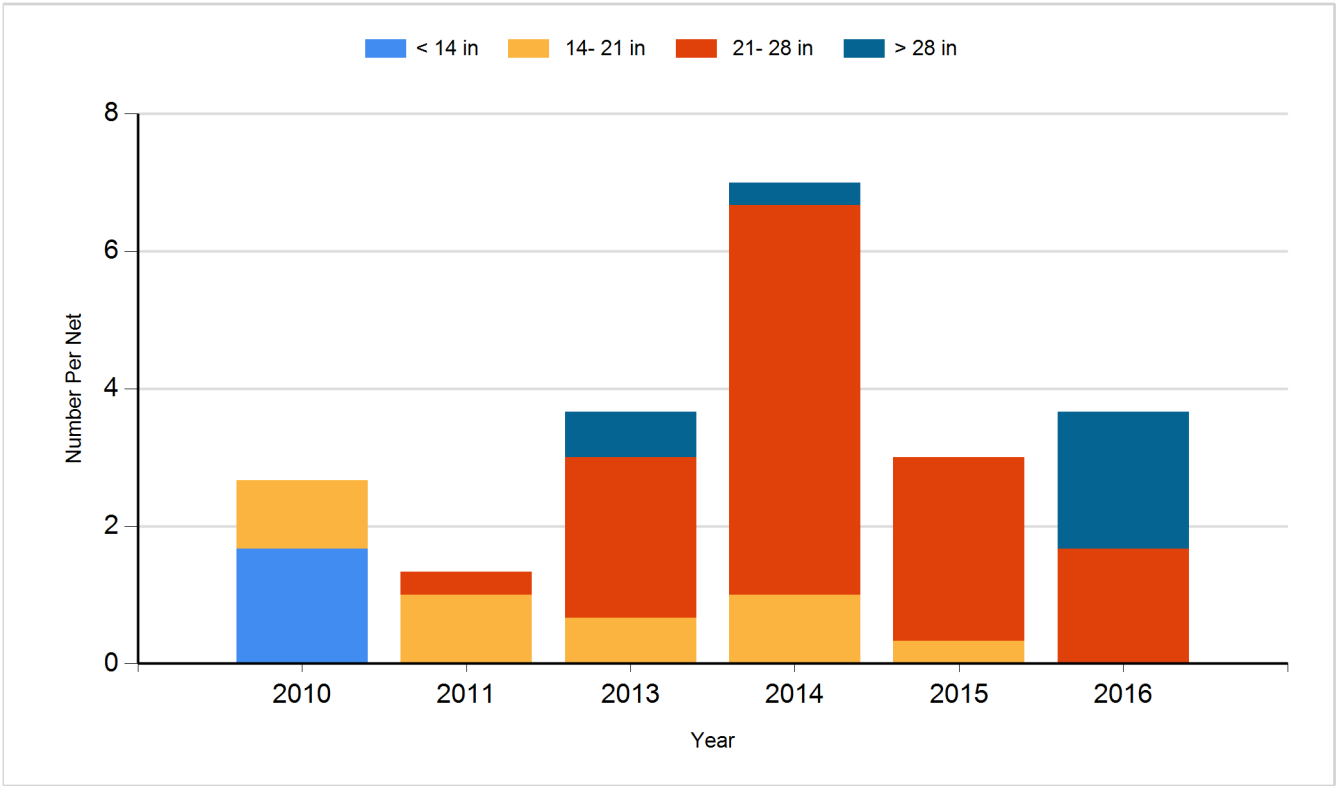
Species: Common Carp
Gear: AFS std gill net



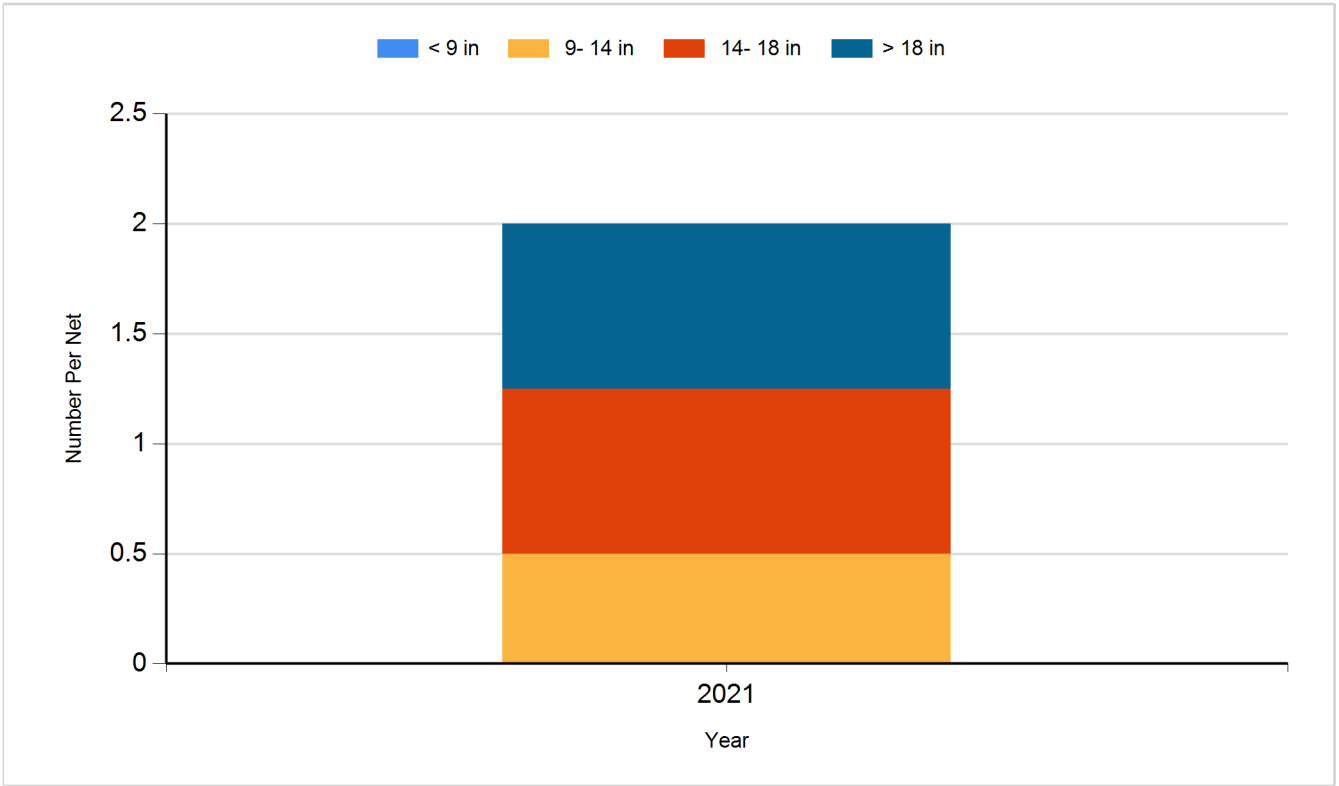
Species: Northern Pike
Gear: AFS std gill net



Species: Northern Pike
Gear: std exp gill net



Species: Saugeye
Gear: AFS std gill net



Fish Stocking

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

Year	Species	Size	Number
2010	Black Crappie	Adult	2,828
2010	Walleye	Small Fingerling	53,770
2010	Yellow Perch	Fingerling	69,782
2014	Northern Pike	Adult	200
2014	Walleye	Fry	262,000
2015	Walleye	Small Fingerling	19,200
2016	Saugeye	Small Fingerling	15,730
2018	Saugeye	Small Fingerling	20,550
2019	Saugeye	Small Fingerling	18,500
2021	Saugeye	Juvenile	19,680