Redfield Dam Survey Summary

A sizeable portion of the shoreline at Redfield Dam, located on the southwest edge of Redfield, borders the Redfield City Park, which offers campground amenities and good public access to the lake including boat launch facilities and a fishing pier. Because the lake is shallow, fisheries management options are limited and less desirable fish species such as black bullheads and common carp tend to be the most abundant. However, species such as black crappie, channel catfish, and northern pike are commonly sampled and may provide angling opportunities beyond those for black bullhead.

- **Black crappie**. Black crappie numbers have increased in each of the last two surveys. In 2019, black crappies were the second most abundant species in the frame net catch (28.2/frame net) and relative abundance was considered high. Sampled black crappies ranged in length from 3.9 to 9.4 inches, of those that were at least 5.0 inches 34% were ≥8.0 inches but none exceeded 10.0 inches.

- **Channel catfish**. Although not abundant, opportunities exist for anglers to catch channel catfish at Redfield Dam. In 2019, 15 individuals ranging in length from 12.8 to 22.6 inches were sampled.

- **Northern pike**. Fewer northern pike were sampled during 2019 than in 2015 and 2010. At 0.5/gill net, relative abundance was low. Only three northern pike that ranged in length from 15.3 to 35.6 inches were netted.

- **Walleye.** Walleyes have been stocked on five occasions since 2008, but few have been sampled in surveys conducted from 2010 – 2019. No walleyes were sampled in 2019.

For more detailed results see the computer generated South Dakota Statewide Fisheries Survey for the Redfield (Spink; below).

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Redfield, Spink County
TUR-Lake-1-000
2019

Lake Information

Name: Redfield

County: Spink

Surface Area: 242 Acres

Maximum Depth: 12 Feet

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jun 04, 2019	3 net-nights
AFS std gill net	Jun 05, 2019	3 net-nights
frame net (std 3/4 in)	Jun 04, 2019	5 net-nights
frame net (std 3/4 in)	Jun 05, 2019	6 net-nights

Common Fish Species Present

Walleye

Northern Pike

Channel Catfish

Black Crappie

Black Bullhead

Common Carp

Pumpkinseed

Yellow 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	Bigmouth Buffalo	20	0.0	0.0	0		0			
	Black Bullhead	83	9.5	4.2	2		0		102	2
	Channel Catfish	7	1.2	0.8	71		0		115	6
	Common Carp	38	5.7	2.3	85	10	9		92	2
	Northern Pike	3	0.5	0.3	33		0		94	5
	Yellow Bullhead	2	0.3	0.3	100		50		105	12
frame net (std 3/4 in)	Bigmouth Buffalo	10	0.0	0.0	0		0			
	Black Bullhead	1047	62.9	22.9	0		0		95	1
	Black Crappie	346	28.2	15.2	34	4	0		112	2
	Bluegill	7	0.6	0.4	71		0		103	3
	Channel Catfish	8	0.7	0.5	38		0			
	Common Carp	20	1.4	1.2	93		7		88	2
	Pumpkinseed	33	3.0	1.3	3		0		117	2
	Yellow Bullhead	25	2.3	1.4	84		12		175	59

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	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Avg
AFS std gill net	Bigmouth Buffalo										0.0	0.0
	Black Bullhead										9.5	9.5
	Channel Catfish										1.2	1.2
	Common Carp										5.7	5.7
	Northern Pike										0.5	0.5
	Yellow Bullhead										0.3	0.3
frame net (std 3/4 in)	Bigmouth Buffalo		0.1				0.0				0.0	0.0
	Black Bullhead		101.3				378.8				62.9	181.0
	Black Crappie		12.0				17.1				28.2	19.1
	Bluegill		0.0				0.1				0.6	0.2
	Channel Catfish		0.2				0.3				0.7	0.4
	Common Carp		1.8				0.3				1.4	1.2
	Northern Pike		2.7				1.3				0.0	1.3
	Orangespotted Sunfish*		0.0				0.5				0.0	0.2
	Pumpkinseed		0.0				0.0				3.0	1.0
	Walleye		0.1				0.1				0.0	0.1
	White Sucker		0.1				0.0				0.0	0.0
	Yellow Bullhead		0.5				4.0				2.3	2.3
std exp gill net	Black Bullhead		8.0				84.7					46.4
	Black Crappie		0.0				0.3					0.2
	Channel Catfish		0.0				0.0					0.0
	Common Carp		5.3				13.0					9.2
	Northern Pike		9.7				3.0					6.4
	Walleye		0.0				1.3					0.7
	Yellow Bullhead		0.0				0.3					0.2
	Yellow Perch		1.0				0.3					0.7

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	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
AFS std gill net	Northern Pike	PSD										33
		PSD-P										0
		Wr										94
frame net (std 3/4 in)	Black Crappie	PSD		76				83				34
		PSD-P		5				1				0
		Wr		101				99				112
std exp gill net	Northern Pike	PSD		55				100				
		PSD-P		3				11				
		Wr		94				89				
	Walleye	PSD						75				
		PSD-P						50				
		Wr						92				

Fish Condition

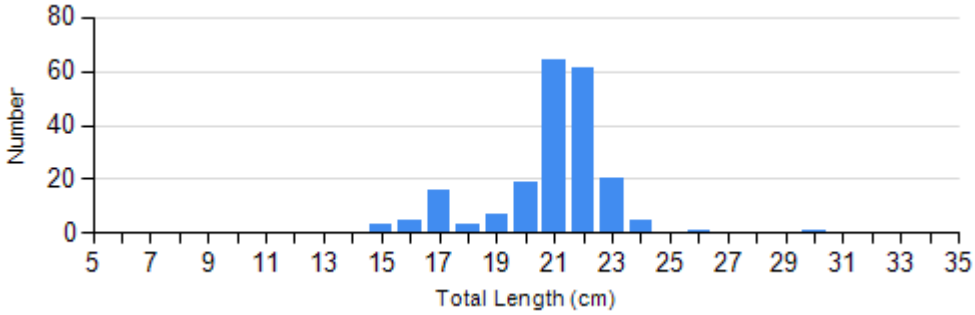
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2015	34	109 (1.5)	169	97 (0.5)	1	103	1	84
	2019	206	118 (1.6)	104	101 (1.4)	0		0	
Channel Catfish Gill Net	2015	0		0		0		0	
	2019	2	132 (4.5)	5	109 (1.8)	0		0	
Northern Pike Gill Net	2015	0		8	87 (1.7)	1	100	0	
	2019	2	90 (2.5)	1	100	0		0	
Walleye Gill Net	2015	1	86	1	101	2	91 (4.3)	0	

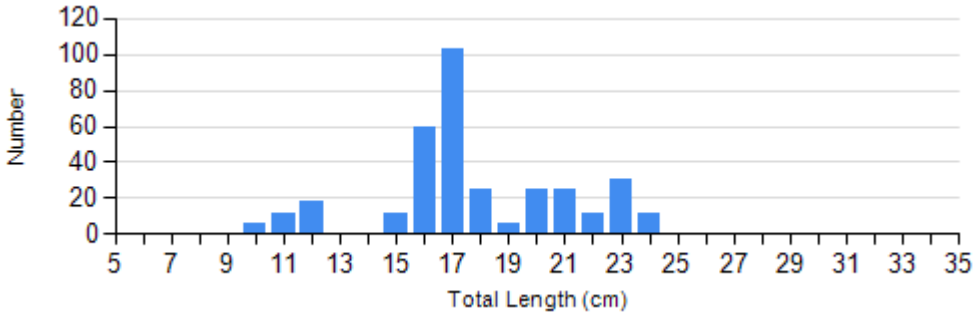
Length Frequency Distribution

Length frequency histogram of species sampled by year.

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



2015

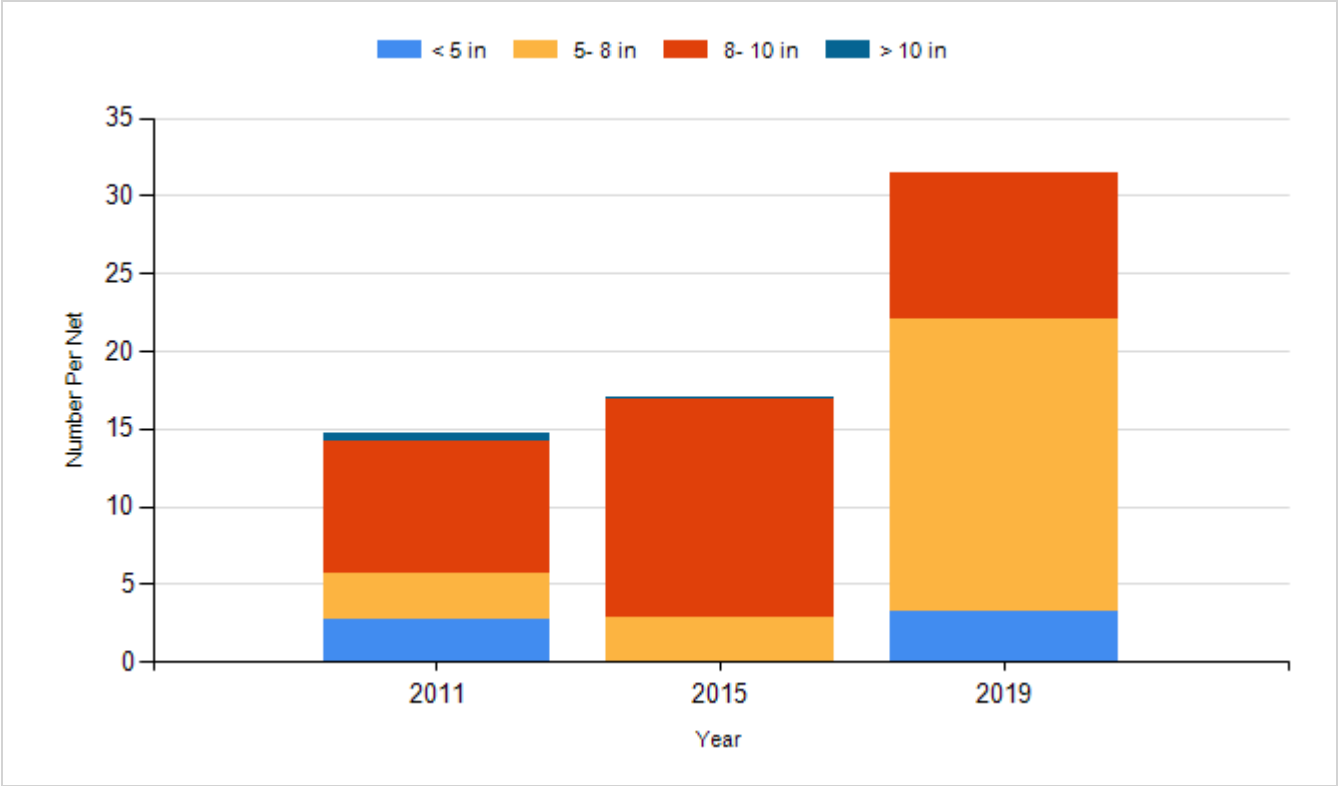


2019

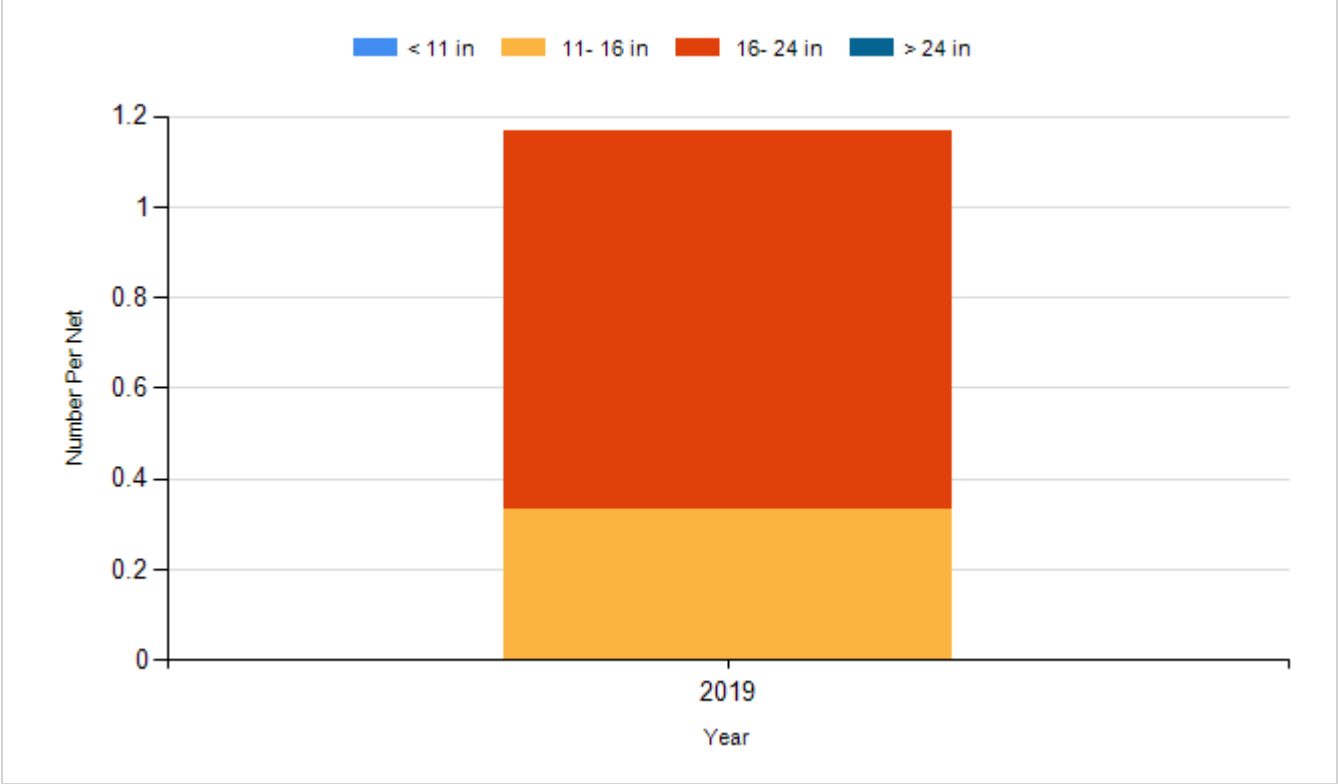
Historic Fish Sizes and Relative Abundance

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

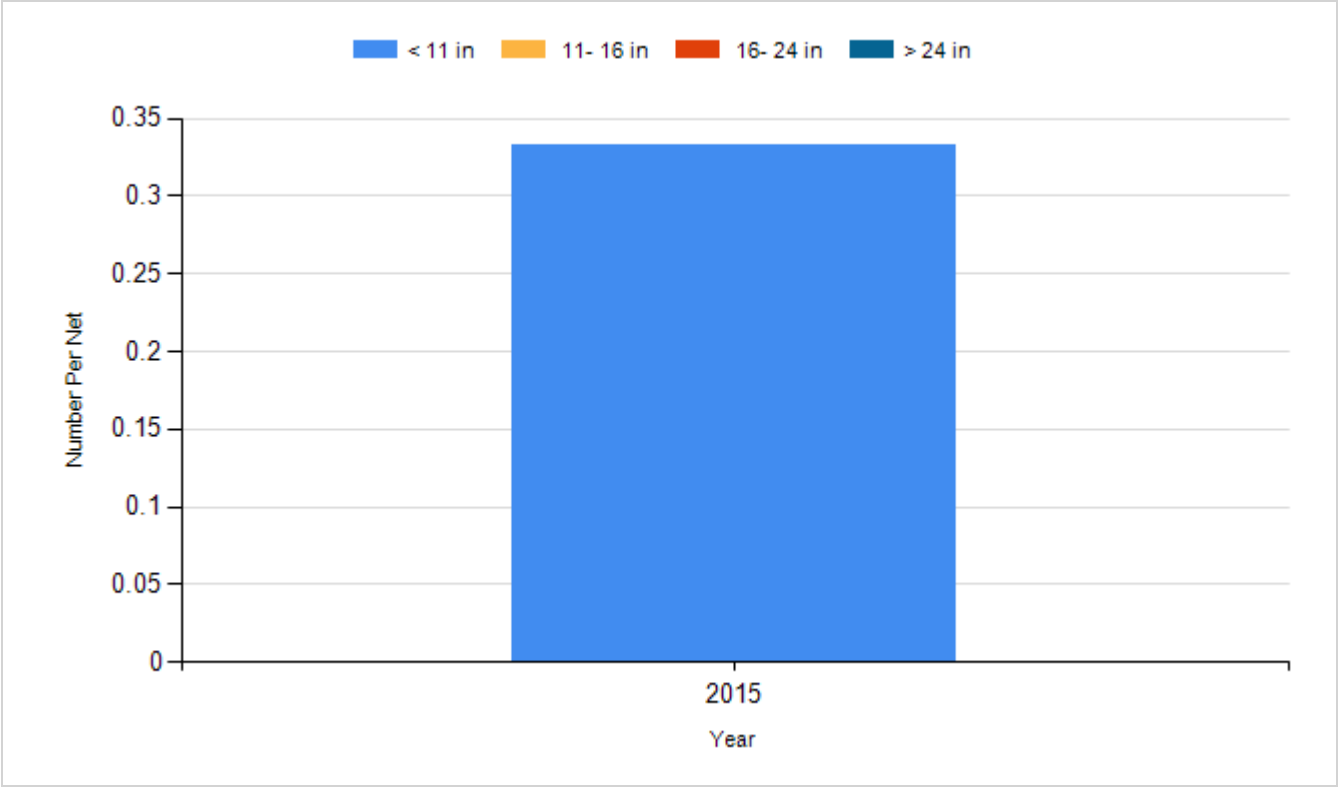
Species: Black Crappie
Gear: frame net (std 3/4 in)



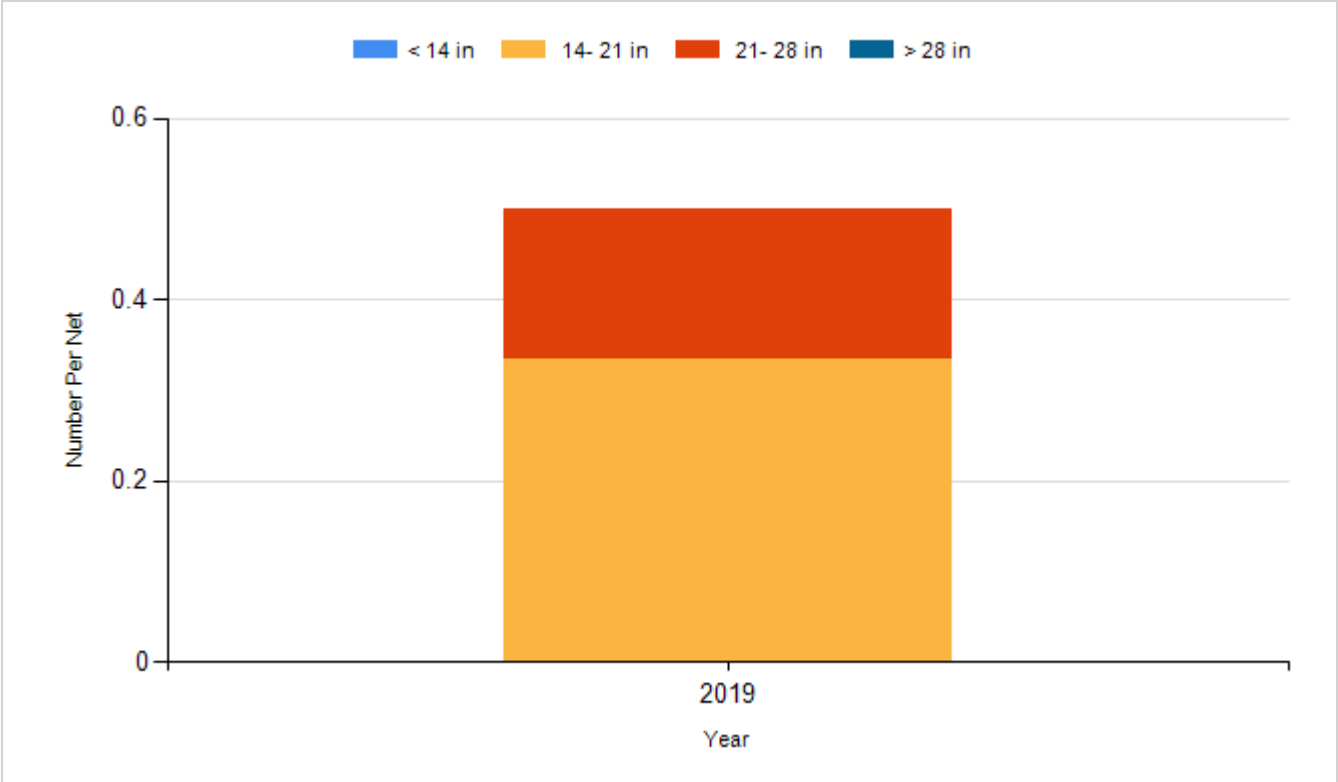
Species: Channel Catfish
Gear: AFS std gill net



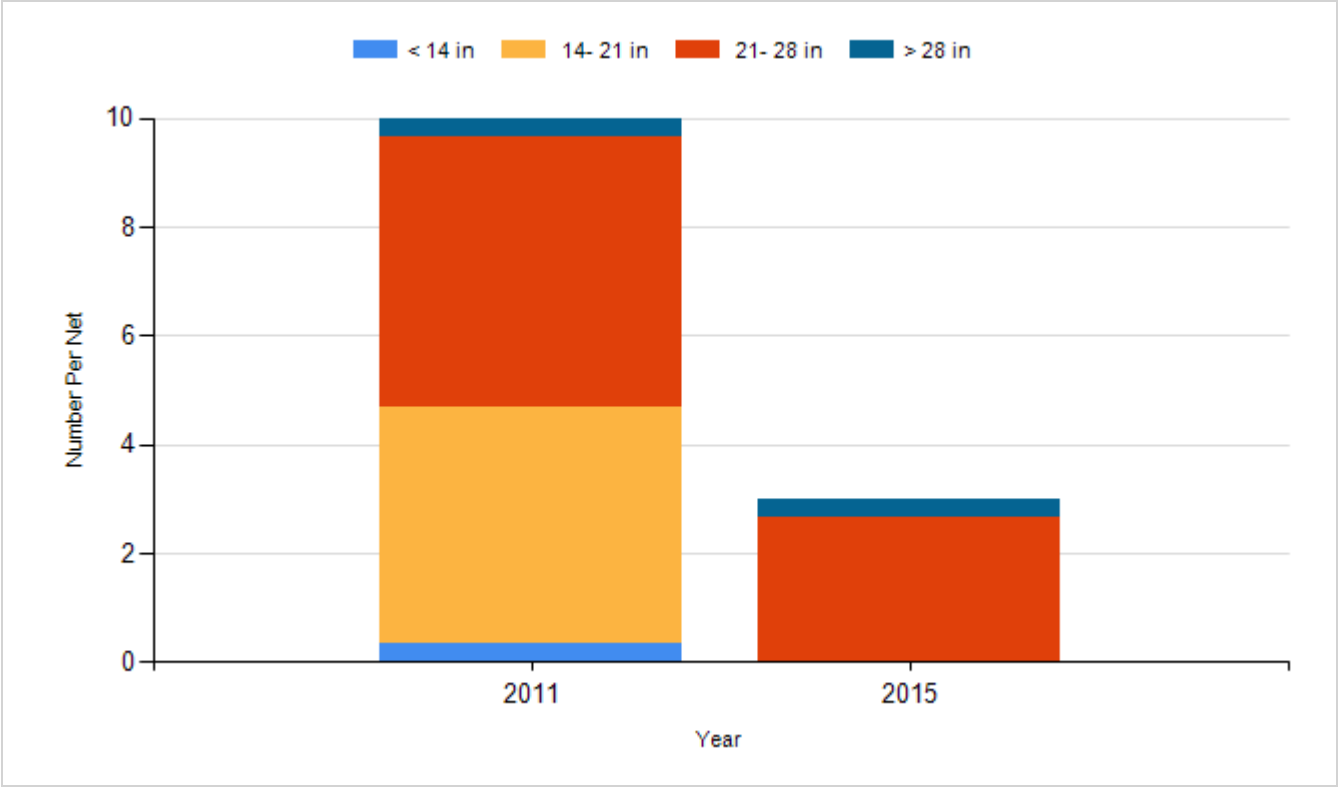
Species: Channel Catfish
Gear: std exp gill net



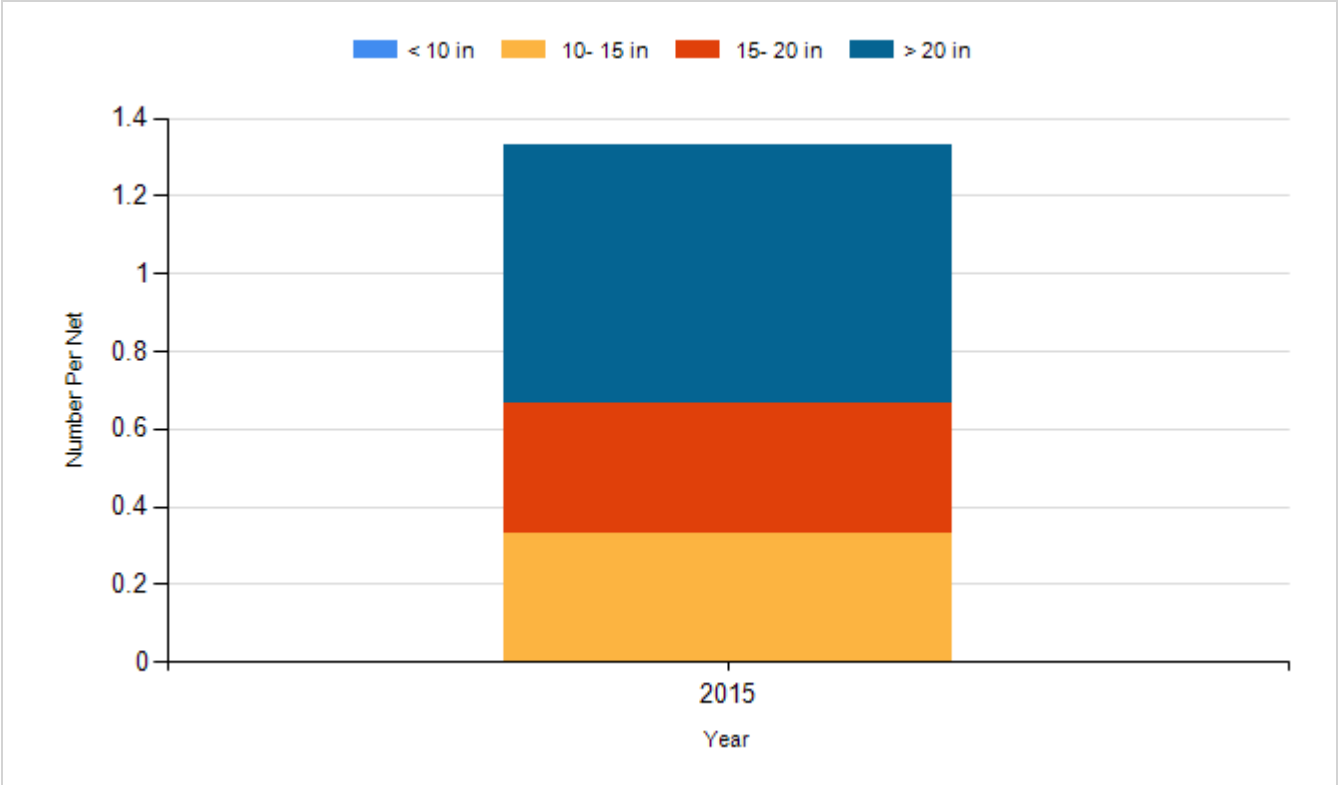
Species: Northern Pike
Gear: AFS std gill net



Species: Northern Pike
Gear: std exp gill net



Species: Walleye
Gear: std exp gill net



Fish Stocking

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

Year	Species	Size	Number
2008	Walleye	Small Fingerling	20,720
2010	Walleye	Fry	200,000
2012	Walleye	Fry	104,710
2014	Walleye	Fry	100,000
2016	Yellow Perch	Juvenile	4,800
2017	Walleye	Fry	100,000