

East Krause Survey Summary

East Krause Lake, located 1.0 mile west and 1.5 miles north of Roslyn, is managed as a walleye and yellow perch fishery. Other fish species (e.g., black crappie) are present and may contribute to the fishery.

- **Walleye.** Walleyes were the most abundant species in the 2019 gill net catch. At 12.3/ gill net, relative abundance was high. Nearly all (73 of 75) were <15.0 inches and belonged to the 2018 (age-1) cohort, which coincided with a fry stocking. The mean length at capture of the 2018 (age-1) year class was 11.2 inches.
- **Yellow perch.** Yellow perch were not abundant (3.7/gill net) in 2019. Sampled yellow perch ranged in length from 5.9 to 10.2 inches, 55% were ≥ 8.0 inches and 9% were 10.0 inches or longer. Individuals from two cohorts (2017 and 2018) contributed to the catch. Growth appears to be moderate to fast with mean length at capture values at age 2 from 7.6 to 9.3 inches since 2013. In 2019, the mean length at capture of age-2 fish was 9.3 inches.

For more detailed results see the computer generated South Dakota Statewide Fisheries Survey for Krause, East (Day; below).

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

Krause East, Day County

UJA-Lake-866-024

2019

Lake Information

Name: Krause East **Maximum Depth:** 18 Feet
County: Day
Surface Area: 171 Acres

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Aug 27, 2019	6 net-nights

Common Fish Species Present

Yellow Perch

Walleye

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.
- **std 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.

$$CPUE = \frac{\text{number of fish}}{\text{effort}}$$

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.

$$PSD = \left(\frac{\text{number of fish} \geq \text{quality length}}{\text{number of fish} \geq \text{stock length}} \right) \times 100$$

$$PSD - P = \left(\frac{\text{number of fish} \geq \text{preferred length}}{\text{number of fish} \geq \text{stock length}} \right) \times 100$$

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.

$$Wr = \left(\frac{W}{Ws} \right) \times 100$$

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).

Species Name	Stock		Quality		Preferred		Memorable		Trophy	
	(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**

Gear	Species	Sample Size (n)*	Abundance		Stock Density Indices			Condition	
			CPUE	CI-80	PSD	CI-80	PSD-P	CI-80	Wr
AFS std gill net	Black Bullhead	32	5.2	2.0	35	13	6	88	2
	Common Carp	42	6.7	1.5	35	11	10	95	1
	Walleye	75	12.3	2.7	3		3	80	1
	Yellow Perch	22	3.7	2.3	55	17	9	94	2

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.

Gear	Species	CPUE										Avg
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
AFS std gill net	Black Bullhead							2.7			5.2	4.0
	Common Carp							0.5			6.7	3.6
	Walleye							0.7			12.3	6.5
	Yellow Perch							19.7			3.7	11.7
frame net (std 3/4 in)	Black Bullhead				24.6							24.6
	Black Crappie				0.3							0.3
	Common Carp				0.0							0.0
	Green Sunfish				1.9							1.9
	Walleye				3.3							3.3
	Yellow Perch				5.6							5.6
std exp gill net	Black Bullhead				33.7							33.7
	Common Carp				0.0							0.0
	Walleye				8.0							8.0
	Yellow Perch				14.0							14.0

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.

Gear	Species	Index	Year											
			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019		
AFS std gill net	Walleye	PSD								75			3	
		PSD-P								50			3	
		Wr								98			80	
	Yellow Perch	PSD									0			55
		PSD-P									0			9
		Wr									92			94
std exp gill net	Walleye	PSD				25								
		PSD-P				0								
		Wr				97								
	Yellow Perch	PSD				17								
		PSD-P				0								
		Wr				97								

Length at Capture

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

Species: Walleye

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2019	75	284 (73)		525 (2)							
2016	4	363 (1)	468 (1)				588 (2)				
2013	24	290 (18)		467 (6)							

Species: Yellow Perch

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2019	22	168 (10)	237 (12)								
2016	118	163 (117)	194 (1)								
2013	42	153 (33)	217 (9)								

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).

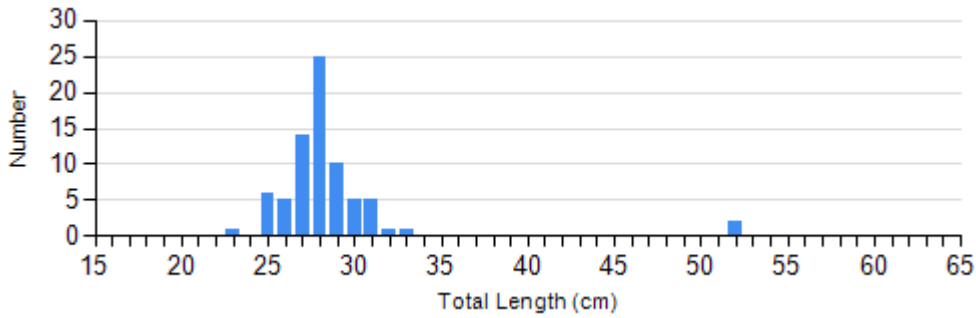
Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Walleye Gill Net	2016	1	98	1	91	1	98	1	105
	2019	72	80 (0.5)	0		2	91 (2.8)	0	
Yellow Perch Gill Net	2016	118	92 (0.7)	0		0		0	
	2019	10	99 (1.6)	10	91 (1.7)	2	80 (3.8)	0	

Length Frequency Distribution

Length frequency histogram of species sampled by year.

Species: Walleye

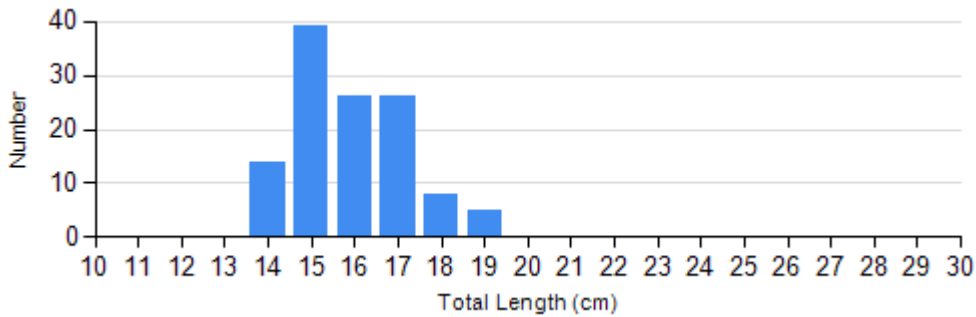
Gear: AFS std gill net



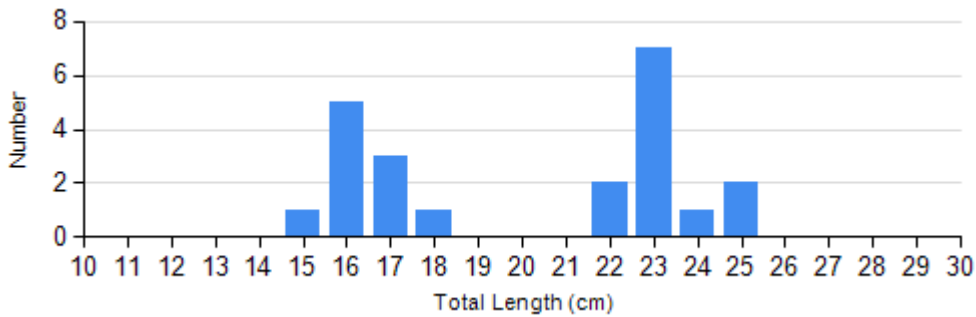
2019

Species: Yellow Perch

Gear: AFS std gill net



2016

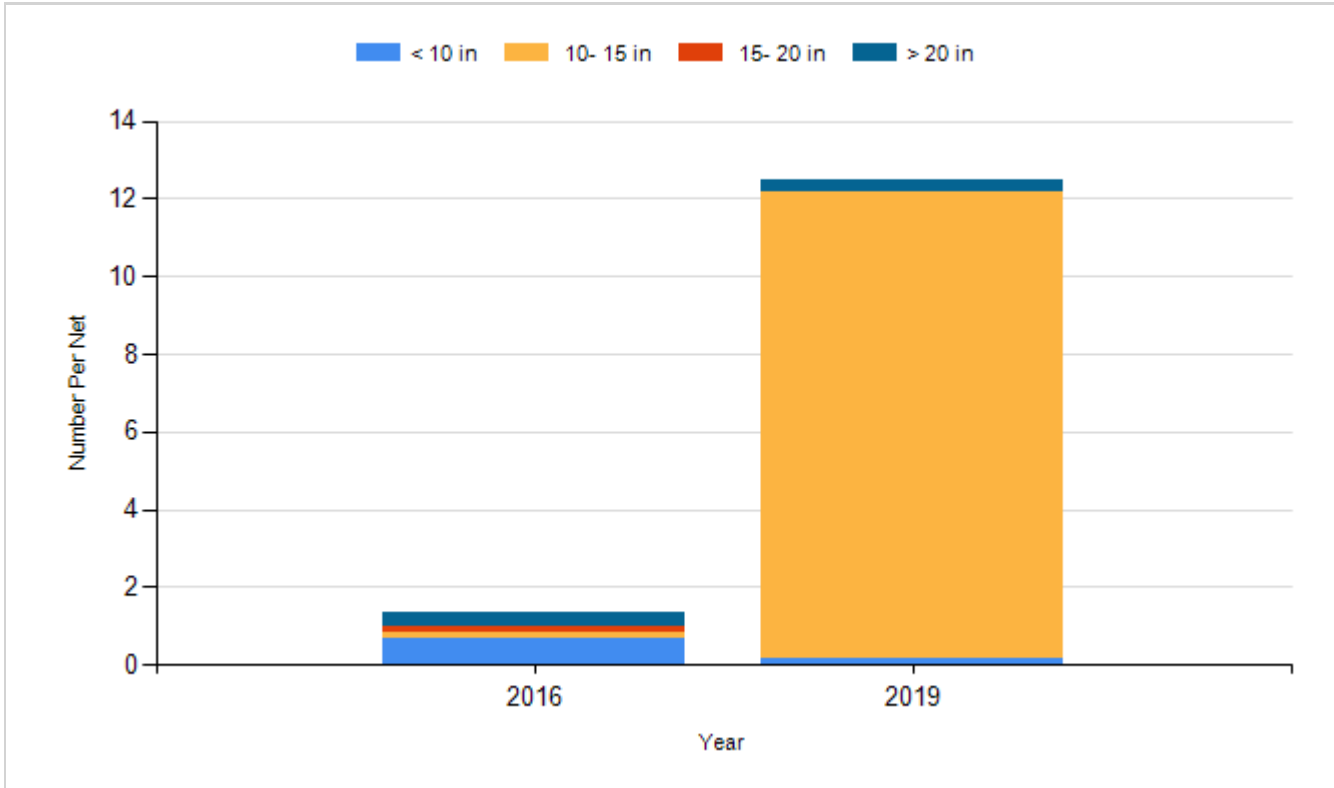


2019

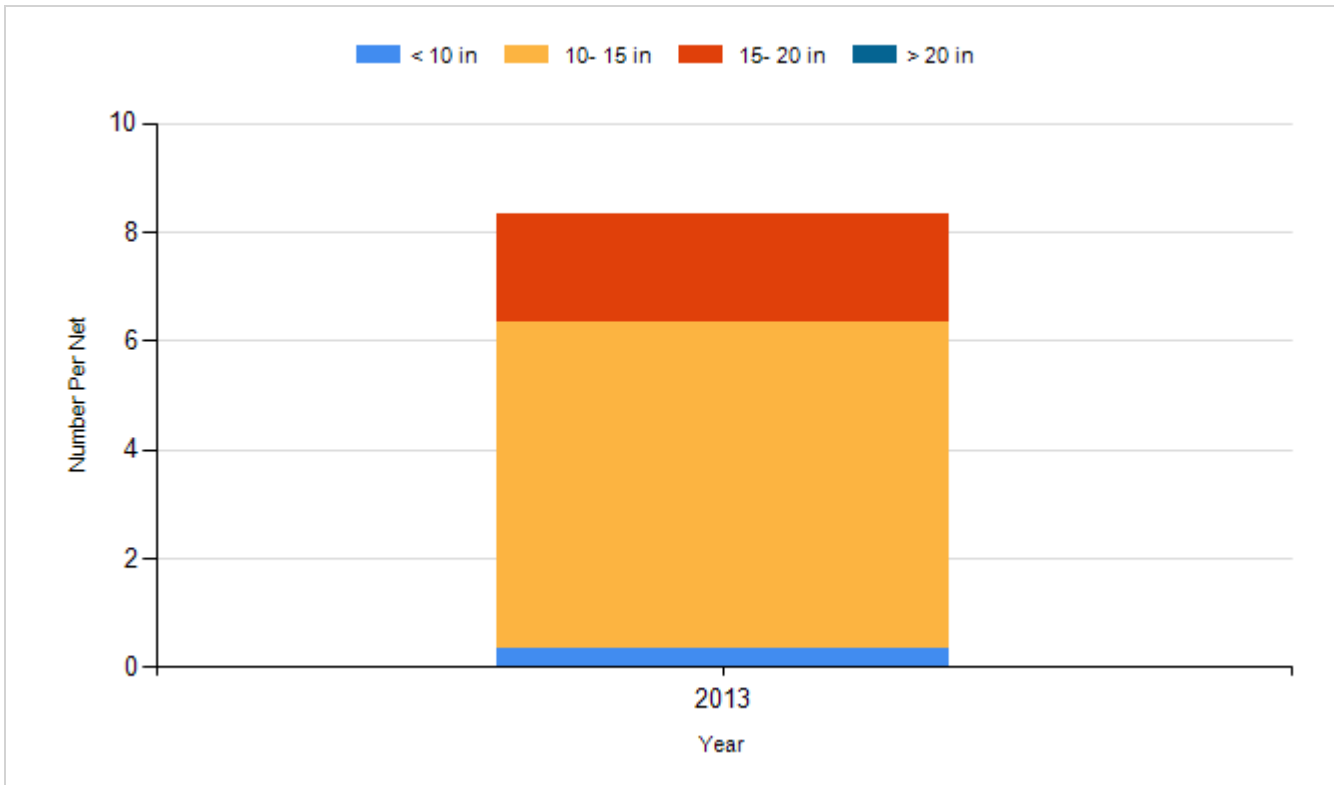
Historic Fish Sizes and Relative Abundance

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

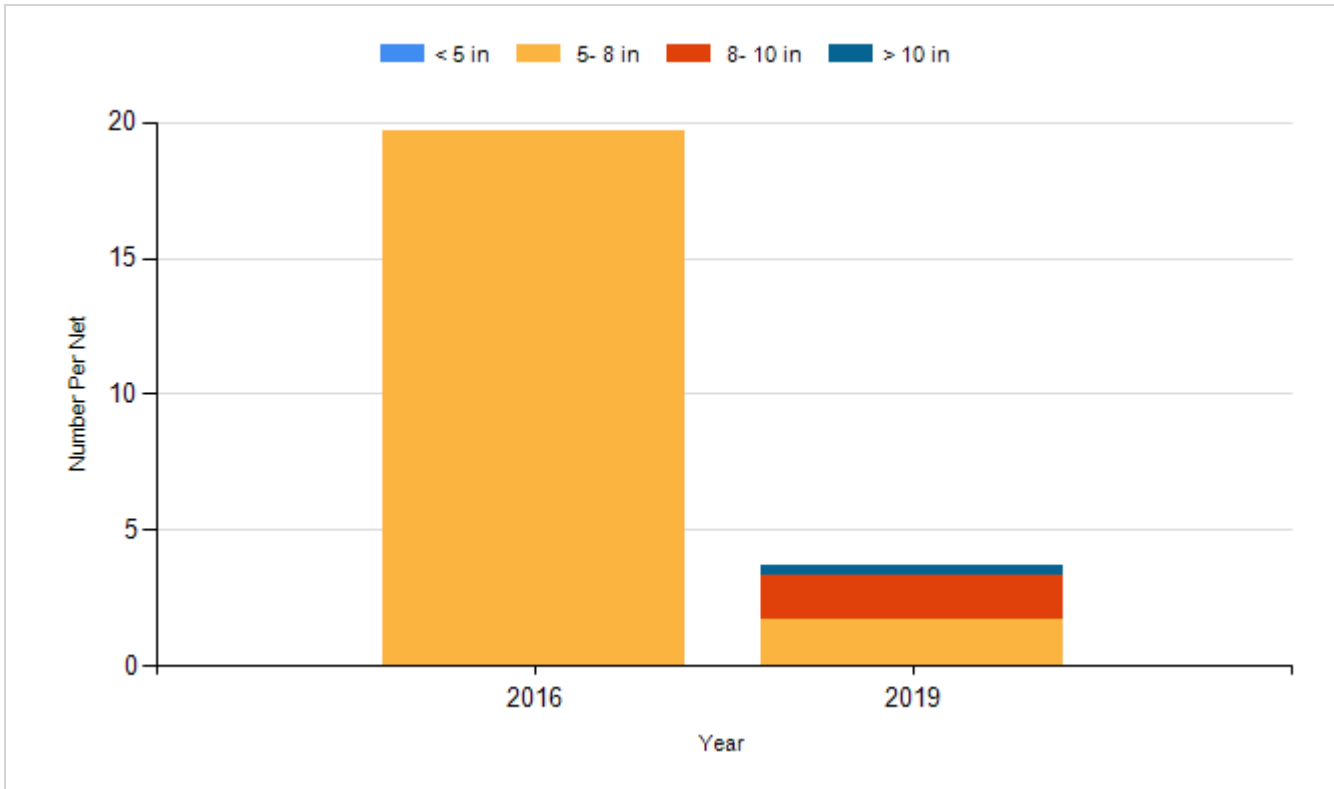
Species: Walleye
Gear: AFS std gill net



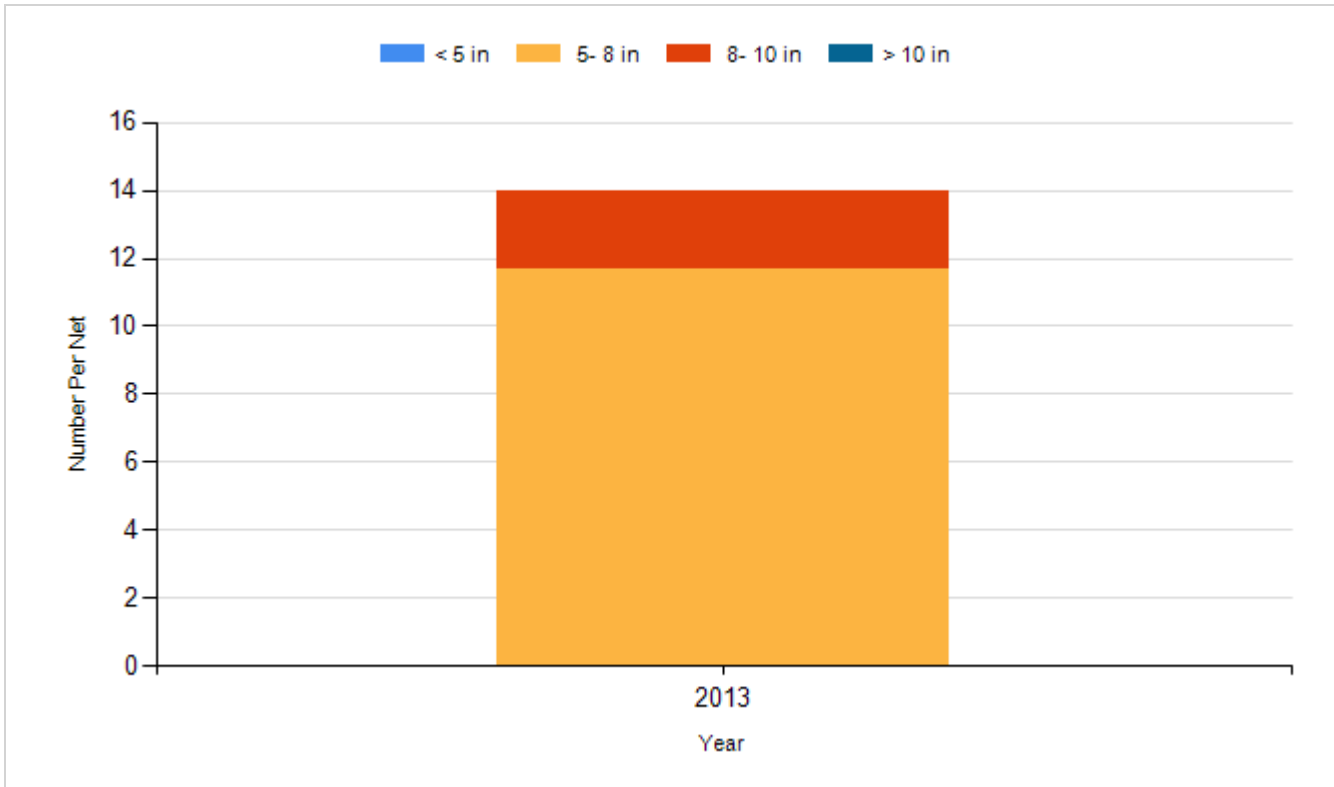
Species: Walleye
Gear: std exp gill net



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
2008	Gizzard Shad	Adult	50
2008	Walleye	Fry	200,000
2008	Yellow Perch	Fry	183,000
2009	Gizzard Shad	Adult	50
2009	Walleye	Fry	200,000
2009	Yellow Perch	Fry	188,000
2010	Black Crappie	Fingerling	10,080
2010	Walleye	Fry	200,000
2012	Walleye	Fry	90,000
2014	Walleye	Fry	100,000
2018	Walleye	Fry	100,000