Clear Lake Survey Summary

Clear Lake, located 1.0 mile east of Thomas, is managed as a walleye and yellow perch fishery but other fish species (e.g., black and white crappies, northern pike) are present and contribute to the fishery.

- **Walleye.** At 7.7/gill net, relative abundance of walleyes ≥10.0 inches was moderate to high. Sampled walleyes ranged in length from 6.7 to 27.6 inches, of those that were at least 10.0 inches 98% were ≥15.0 inches and 11% were ≥20.0 inches. Individuals from eight year classes produced between 2009 and 2019 contributed to the catch; the three most represented cohorts (2015, 2017, and 2019) all coincided with fry stockings. Walleyes from the 2017 (age-3) year class were the most abundant accounting for 52% of fish in the sample, while those from the 2015 (age-5) and 2019 (age-1) cohorts made up an additional 41%. The 2020 sample suggests good walleye growth with age-3 fish having a mean length at capture of 16.5 inches.

- **Yellow Perch**. Yellow perch were the most abundant species in the 2020 gill-net catch. At 14.0/gill net, relative abundance was considered moderate. Sampled yellow perch ranged in length from 4.7 to 11.8 inches, of those that were at least 5.0 inches, 41% were ≥8.0 inches and 2% were ≥10.0 inches. Four cohorts (2015, 2016, 2018, and 2019) were represented. Individuals from the 2018 (age-2) year class were the most abundant accounting for more than two-thirds (68%) of yellow perch in the sample. Growth of the 2018 cohort has been moderate to fast with a mean length at capture of 7.9 inches at age 2.

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

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Clear, Hamlin County
UBS-Lake-175-001
2020

Lake Information

Name: Clear

County: Hamlin

Surface Area: 771 Acres

Maximum Depth: 13 Feet

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jun 11, 2020	6 net-nights
AFS std gill net	Jun 12, 2020	6 net-nights

Common Fish Species Present

Walleye

Smallmouth Bass

Northern Pike

Yellow Perch

Black Bullhead

White Sucker

White Crappie

Common Carp

Black Crappie

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	9	0.8	0.5	89		67		111	6
	Black Crappie	1	0.1	0.1	100		100		96	
	Common Carp	2	0.2	0.2	100		100		96	2
	Northern Pike	1	0.1	0.1	100		0		110	
	Walleye	122	7.7	1.0	98		11	5	92	1
	White Crappie	6	0.5	0.3	33		33		106	5
	White Sucker	10	0.8	0.3	100		100		112	5
	Yellow Perch	170	14.0	2.0	41	5	2		115	1

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.

		CPUE										
Gear	Species	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Avg
AFS std gill net	Black Bullhead							2.3			0.8	1.55
	Black Crappie							0.0			0.1	0.05
	Common Carp							2.6			0.2	1.40
	Northern Pike							0.0			0.1	0.05
	Walleye							16.5			7.7	12.10
	White Crappie							0.0			0.5	0.25
	White Sucker							0.6			0.8	0.70
	Yellow Perch							3.6			14.0	8.80
std exp gill net	Black Bullhead	0.0			4.3							2.15
	Black Crappie	0.0			0.2							0.10
	Common Carp	0.2			4.2							2.20
	Northern Pike	0.1			0.3							0.20
	Walleye	25.6			25.7							25.65
	White Crappie	0.1			0.0							0.05
	White Sucker	0.2			1.2							0.70
	Yellow Perch	1.5			20.7							11.10

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	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
AFS std gill net	Walleye	PSD							17			98
		PSD-P							11			11
		Wr							84			92
	Yellow Perch	PSD							95			41
		PSD-P							37			2
		Wr							105			115
std exp gill net	Walleye	PSD	21			3						
		PSD-P	0			3						
		Wr	108			80						
	Yellow Perch	PSD	44			98						
		PSD-P	19			35						
		Wr	104			101						

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+
2020	121	196 (30)	358 (1)	419 (63)	475 (2)	474 (20)		634 (2)		632 (2)	702 (1)
2017	199	250 (4)	321 (163)	463 (1)	498 (10)	444 (1)	519 (18)	571 (1)	624 (1)		
2014	155			322 (150)		544 (5)					
2011	464	263 (72)	371 (389)	463 (1)	485 (2)						

Species: Yellow Perch

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2020	170	143 (51)	201 (116)		299 (2)	277 (1)					
2017	43		220 (24)	252 (5)		304 (2)	304 (10)	301 (3)			
2014	124			242 (117)	284 (7)						
2011	30	140 (18)	242 (8)		295 (4)						

Fish Condition

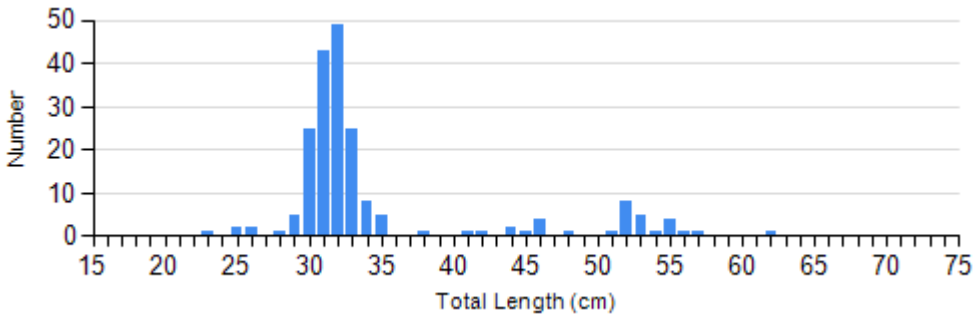
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Walleye Gill Net	2017	165	84 (0.3)	11	85 (1.7)	22	89 (1.4)	0	
	2020	2	90 (5.7)	80	92 (0.6)	6	89 (2.2)	4	89 (2.1)
Yellow Perch Gill Net	2017	2	114 (0.7)	25	109 (1.4)	6	102 (2.9)	10	95 (1.5)
	2020	99	115 (0.7)	66	115 (0.8)	2	102 (5.1)	1	99

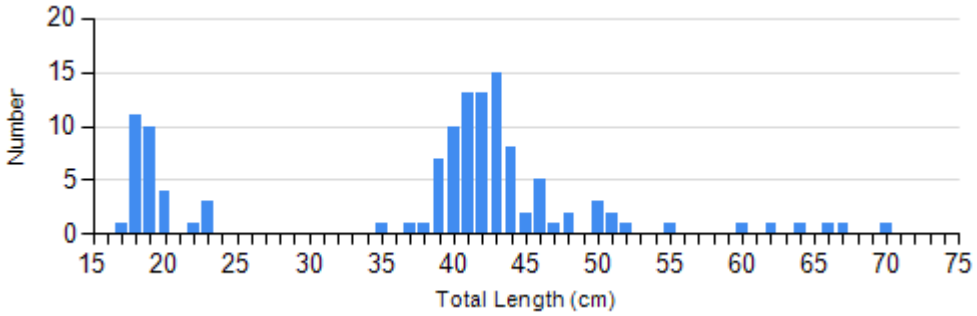
Length Frequency Distribution

Length frequency histogram of species sampled by year.

Species: Walleye
Gear: AFS std gill net

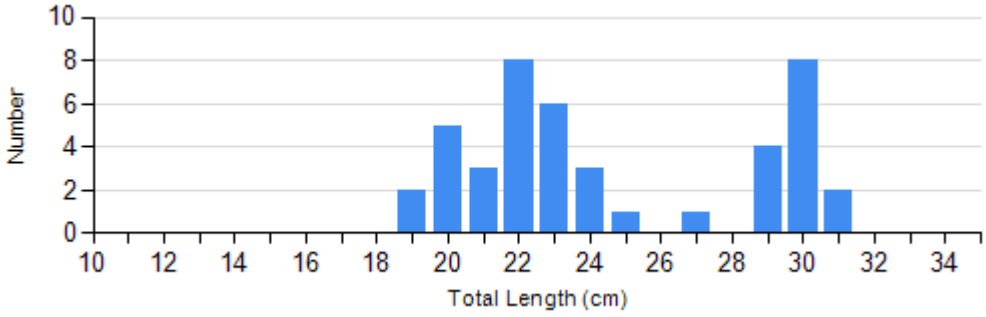


2017

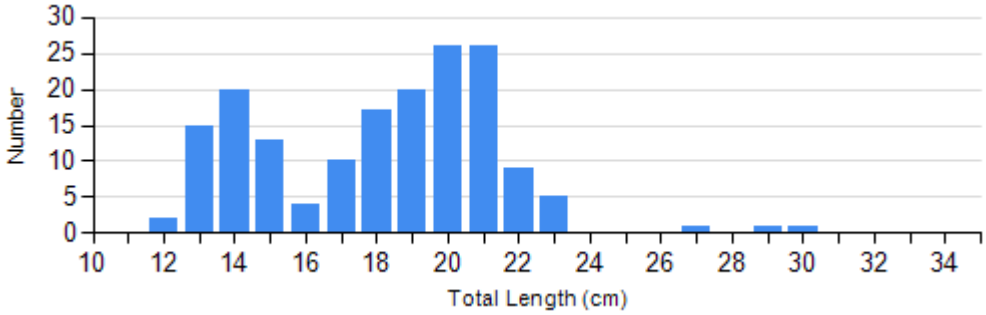


2020

Species: Yellow Perch
Gear: AFS std gill net



2017

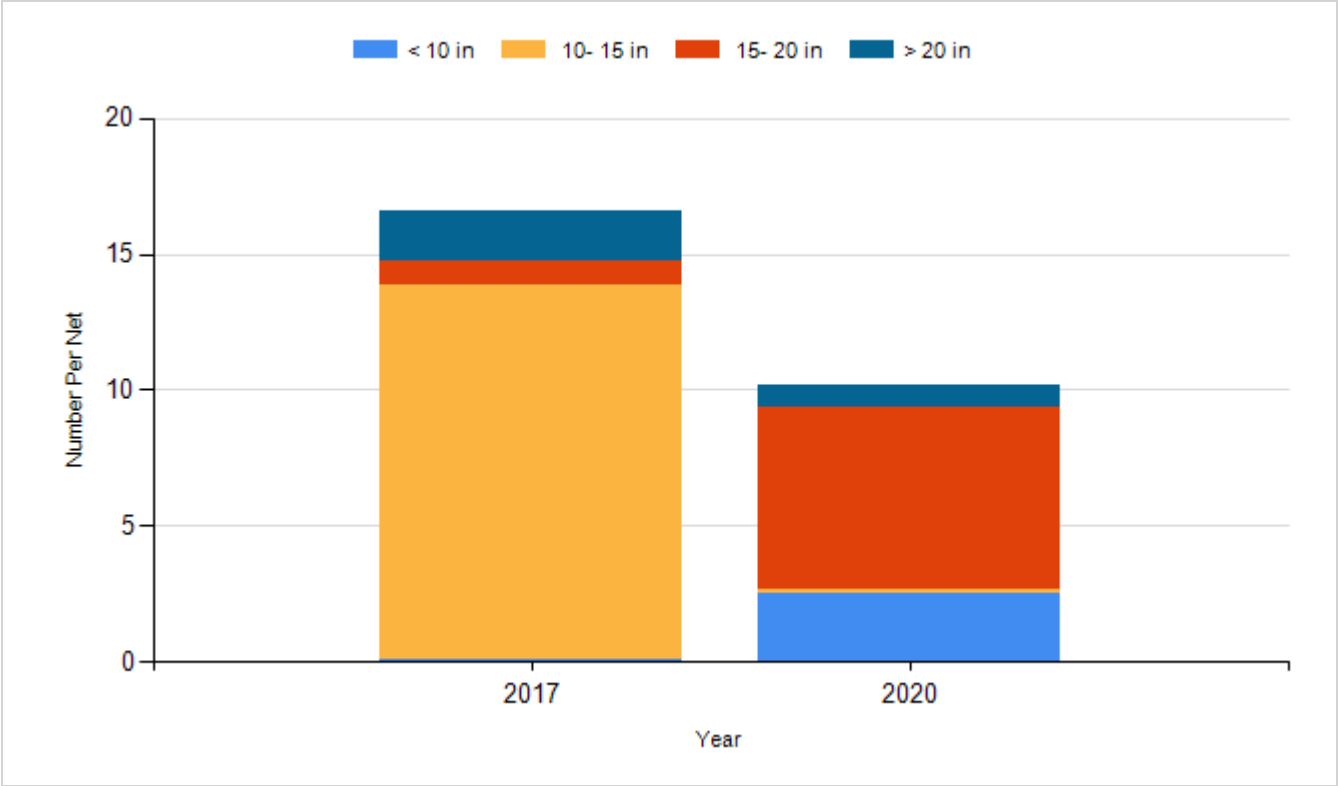


2020

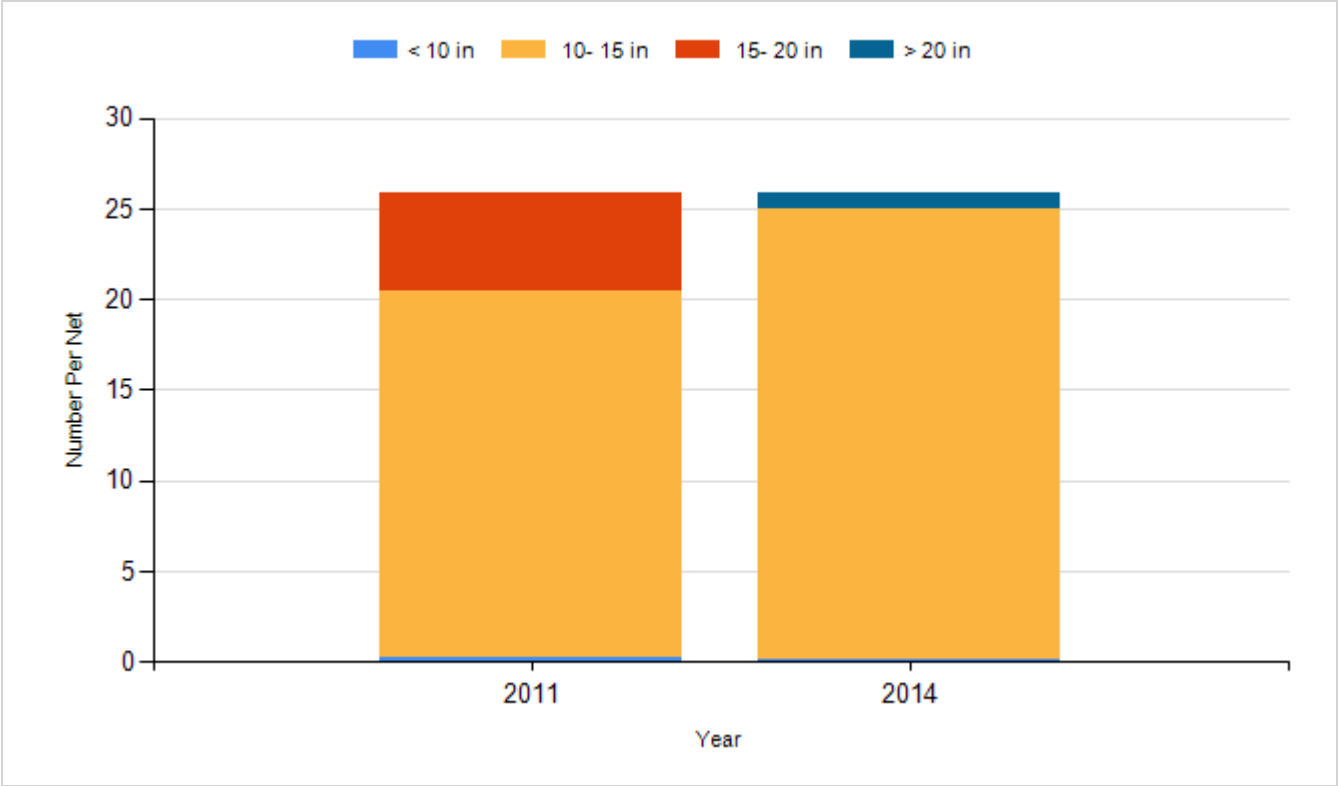
Historic Fish Sizes and Relative Abundance

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

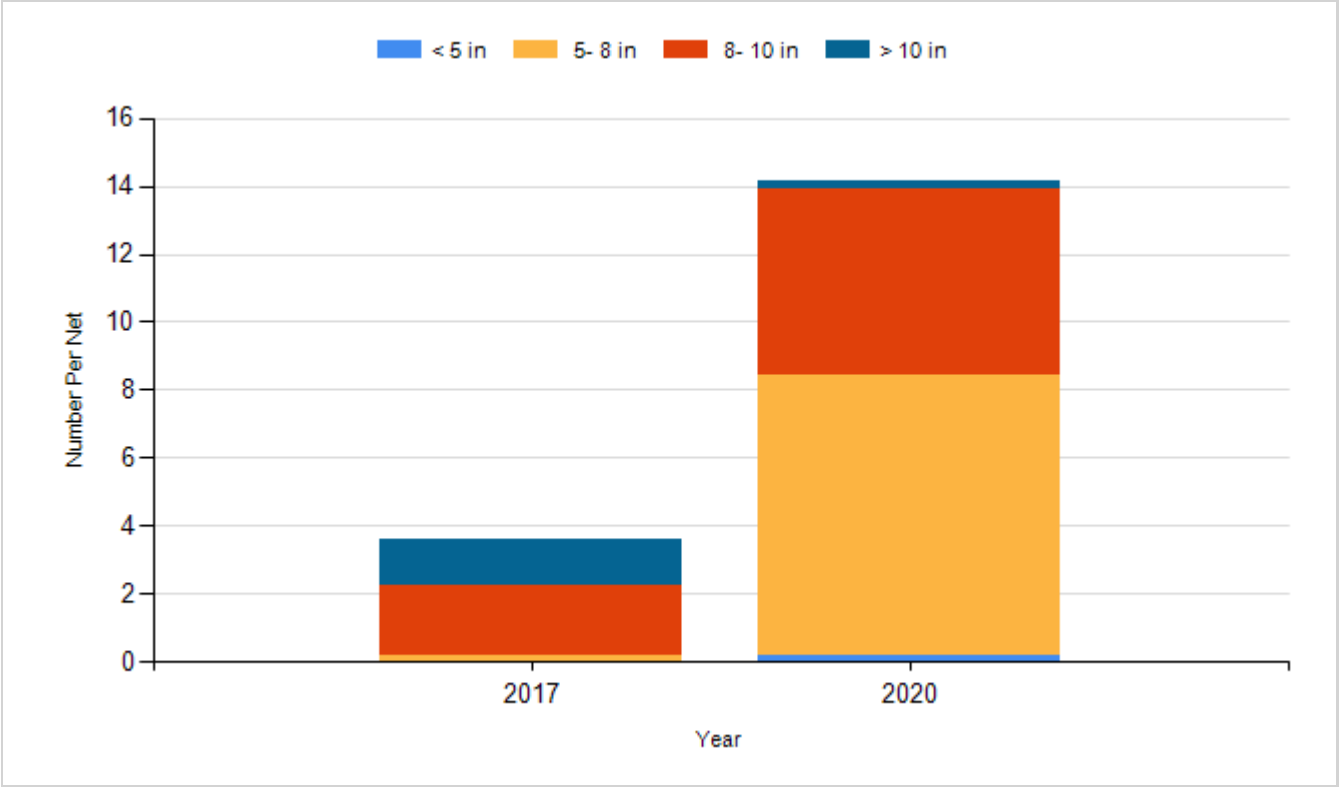
Species: Walleye
Gear: AFS std gill net



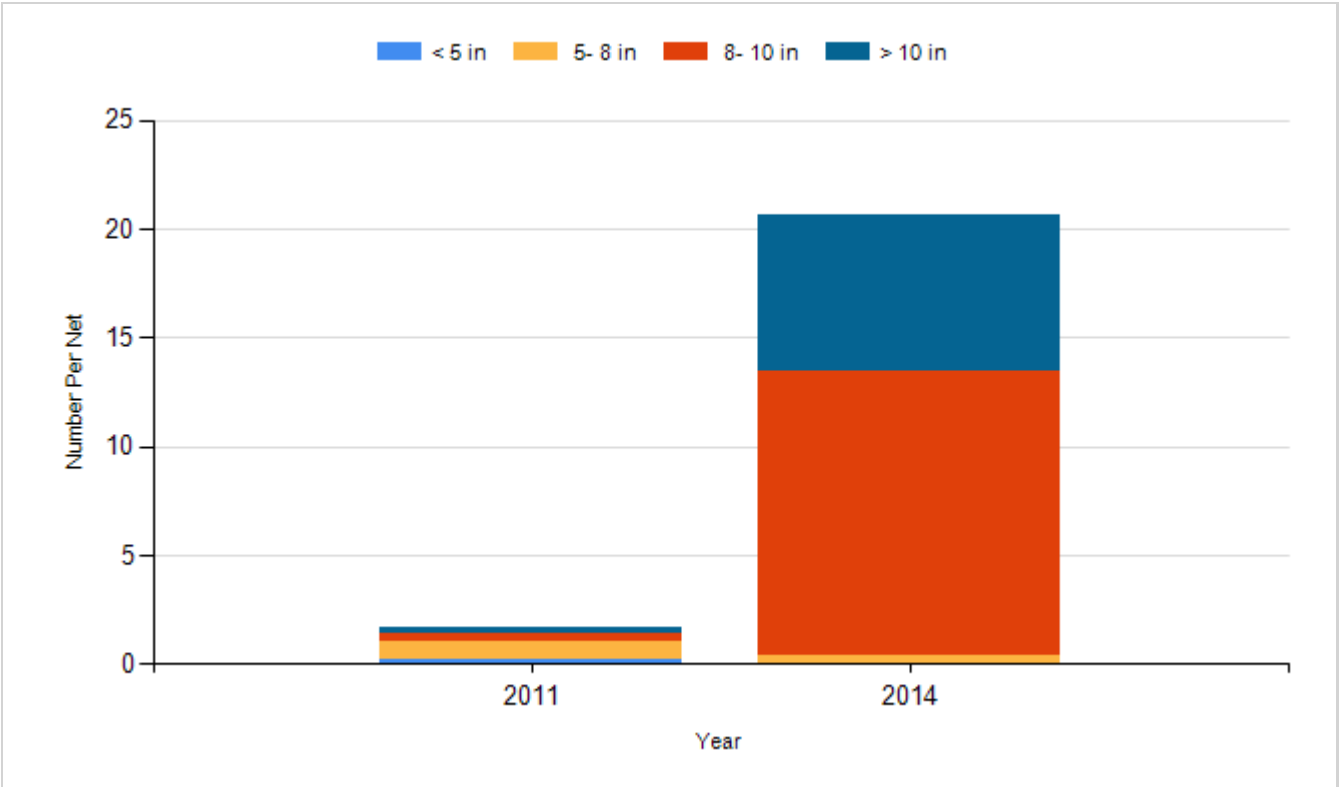
Species: Walleye
Gear: std exp gill net



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
2009	Walleye	Fry	300,000
2010	Black Crappie	Adult	66
2010	Black Crappie	Fingerling	29,920
2010	Walleye	Fry	600,000
2011	Walleye	Fry	300,000
2012	Smallmouth Bass	Fingerling	34,970
2013	Walleye	Fry	300,000
2015	Walleye	Fry	300,000
2017	Walleye	Fry	300,000
2019	Walleye	Fry	300,000