

Pelican Lake Survey Summary

Pelican Lake, located near Watertown, is managed as a walleye and yellow perch fishery but other fish species (e.g., northern pike, white bass) are present and contribute to the fishery.

- **Walleye.** Walleye numbers were similar to those observed in 2017. At 3.0 per gill net, relative abundance was considered low to moderate. Sampled walleyes ranged in length from 15.0 to 26.8 inches, all were ≥ 15.0 inches and just under half (44%) were ≥ 20.0 inches. Seven cohorts (2009, 2010, 2014, 2015, and 2017 – 2019) contributed to the catch, none were particularly strong. Individuals from the 2017 (age-4) year class were the most abundant accounting for 11 of the 36 walleyes sampled. The 2021 sample suggested good walleye growth with a mean length at capture at age 4 of 19.8 inches.
- **Yellow Perch.** Although yellow perch numbers were higher in 2021 than in 2017, relative abundance remained low (4.7 per gill net). Those sampled ranged in length from 5.5 to 12.6 inches, most (71%) were ≥ 8.0 inches and 39% were ≥ 10.0 inches. Individuals from four cohorts (2017 – 2020) contributed to the catch. Year classes produced in 2018 (age 3) and 2019 (age 2) were represented by the same number of individuals and accounted for 71% of yellow perch in the sample. The 2021 sample suggested fast growth with a mean length at capture at age 3 of 11.6 inches.

For more detailed results see the computer-generated South Dakota Statewide Fisheries Survey for Pelican (Codington; below).

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

Pelican, Codington County

UBS-Lake-173-000

2021

Lake Information

Name:	Pelican	Maximum Depth:	8 Feet
County:	Codington	Mean Depth:	5 Feet
		OHWM Elevation:	1,710
Surface Area:	2,779 Acres	Outlet Elevation:	1,710

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jun 30, 2021	6 net-nights
AFS std gill net	Jul 01, 2021	6 net-nights

Common Fish Species Present

Walleye

Northern Pike

Yellow Perch

Bigmouth Buffalo

White Sucker

White Bass

Common Carp

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.

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

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).

Gear	Species	Sample Size (n)	Abundance		Stock Density Indices			Condition		
			CPUE	CI-80	PSD	CI-80	PSD-P	CI-80	Wr	CI-80
AFS std gill net	Bigmouth Buffalo	28	2.2	0.8	88		8		93	2
	Common Carp	1	0.1	0.1	100		100		86	
	Northern Pike	10	0.8	0.3	90		20		95	3
	Walleye	36	3.0	1.1	100		44	13	91	2
	White Bass	15	1.3	0.4	100		100		101	2
	White Sucker	22	1.8	0.8	95		95		111	2
	Yellow Perch	56	4.7	1.4	71	9	39	10	109	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.

* Methods/Species that ignore stock length

Gear	Species	CPUE										Avg
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
AFS std gill net	Bigmouth Buffalo						18.8				2.2	10.50
	Black Bullhead						10.5				0.0	5.25
	Black Crappie						0.2				0.0	0.10
	Common Carp						2.3				0.1	1.20
	Northern Pike						0.2				0.8	0.50
	Walleye						2.8				3.0	2.90
	White Bass						0.1				1.3	0.70
	White Sucker						0.1				1.8	0.95
	Yellow Perch						0.3				4.7	2.50
frame net (std 3/4 in)	Bigmouth Buffalo			20.4								20.40
	Black Bullhead			83.8								83.80
	Black Crappie			2.8								2.80
	Common Carp			0.3								0.30
	Northern Pike			3.7								3.70
	Walleye			1.1								1.10
	White Sucker			6.4								6.40
	Yellow Bullhead			1.1								1.10
	Yellow Perch			0.1								0.10
std exp gill net	Bigmouth Buffalo	0.0		20.7								10.35
	Black Bullhead	21.7		18.8								20.25
	Black Crappie	18.0		0.3								9.15
	Common Carp	15.5		5.3								10.40
	Green Sunfish	0.2		0.0								0.10
	Northern Pike	14.8		2.5								8.65
	Orangespotted Sunfish*	0.2		0.0								0.10
	Spottail Shiner*	2.8		0.2								1.50
	Walleye	9.0		1.3								5.15
	White Bass	14.7		0.0								7.35
	White Sucker	6.7		0.2								3.45
	Yellow Bullhead	0.7		0.0								0.35
	Yellow Perch	79.7		0.2								39.95

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											
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		
AFS std gill net	Walleye	PSD								33			100	
		PSD-P								21			44	
		Wr								82			91	
	Yellow Perch	PSD									100			71
		PSD-P									0			39
		Wr									89			109
std exp gill net	Walleye	PSD	94		88									
		PSD-P	6		13									
		Wr	90		74									
	Yellow Perch	PSD	46		100									
		PSD-P	7		0									
		Wr	97		79									

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+
2021	36		388 (2)	445 (5)	504 (11)		516 (9)	527 (7)			649 (2)
2017	39		232 (2)	302 (26)		493 (5)		565 (4)	585 (2)		
2014	9		251 (2)		423 (6)		568 (1)				
2012	54		401 (40)	490 (12)	584 (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+
2021	56	169 (15)	226 (20)	294 (20)	320 (1)						
2017	3			215 (2)	232 (1)						
2014	1			233 (1)							
2012	489	142 (233)	215 (196)	256 (60)							

Fish Condition

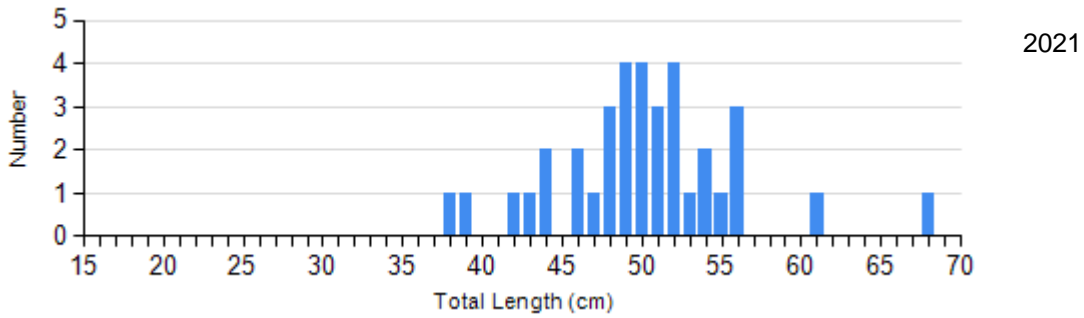
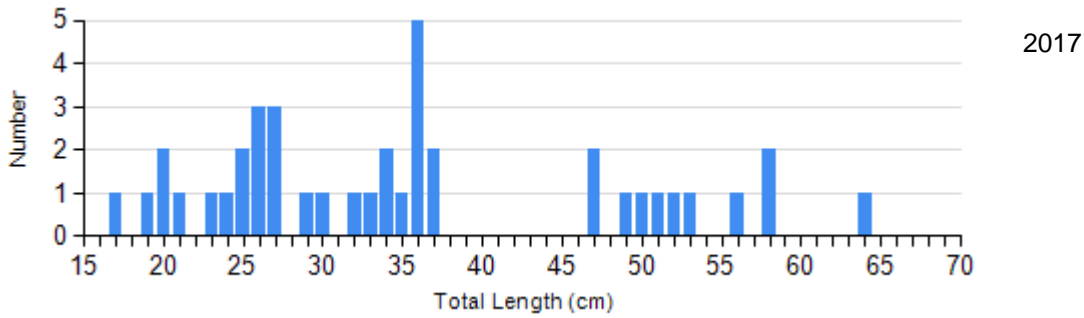
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

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	2017	22	81 (0.8)	4	86 (2.9)	6	84 (0.9)	1	89
	2021	0		20	89 (1.5)	15	93 (1.8)	1	103
Yellow Perch Gill Net	2017	0		3	89 (3.5)	0		0	
	2021	16	108 (2.5)	18	109 (1.7)	12	112 (2.3)	10	105 (3.1)

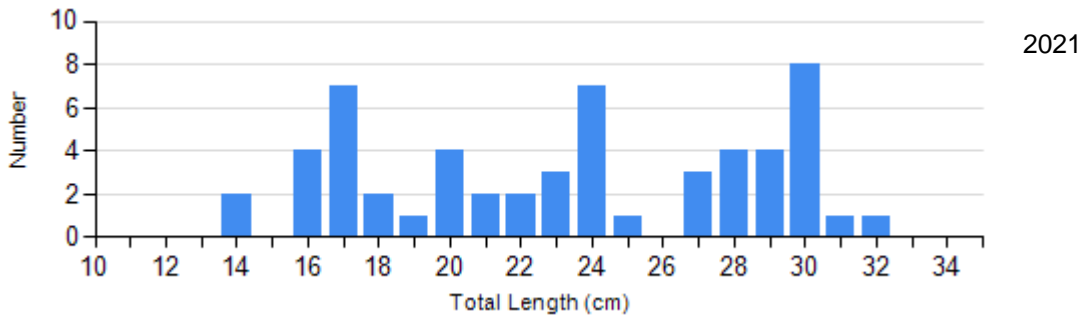
Length Frequency Distribution

Length frequency histogram of species sampled by year.

Species: Walleye
Gear: AFS std gill net



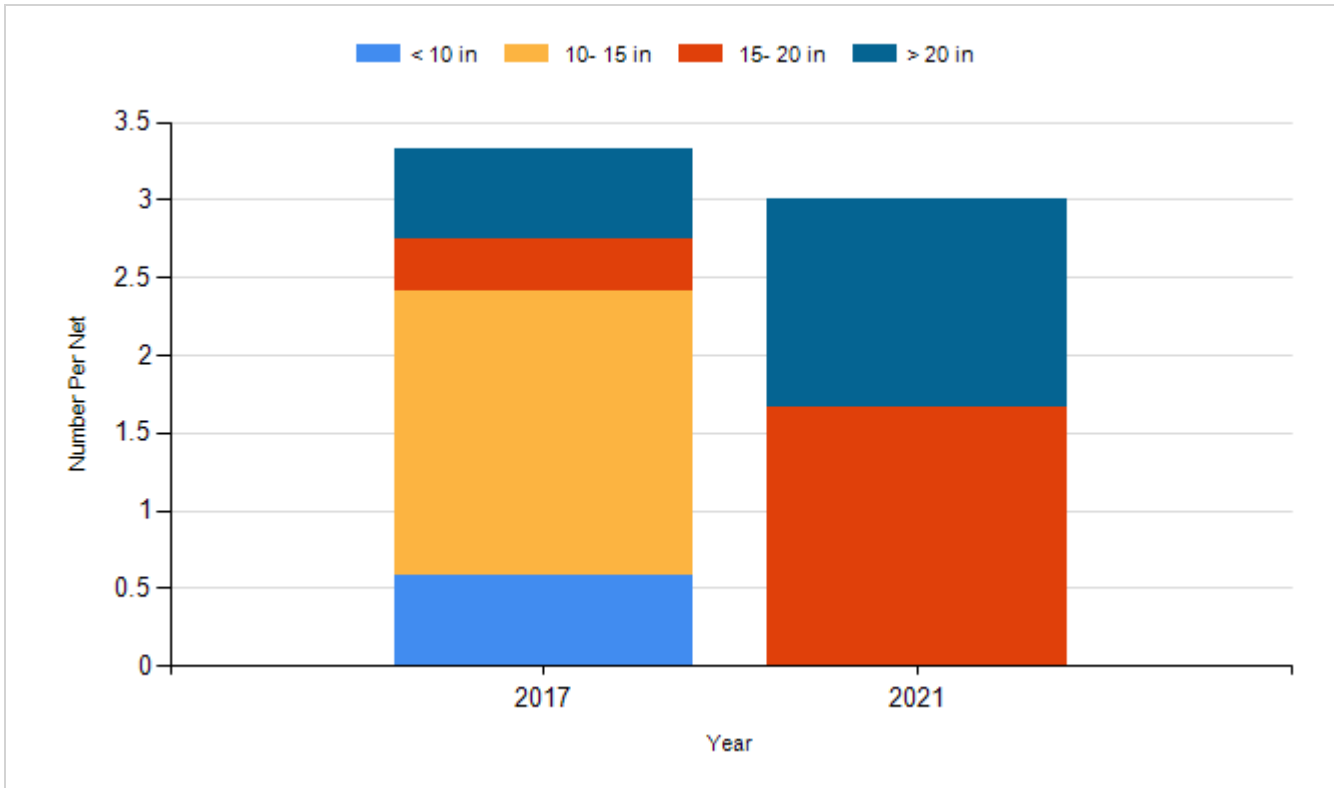
Species: Yellow Perch
Gear: AFS std gill net



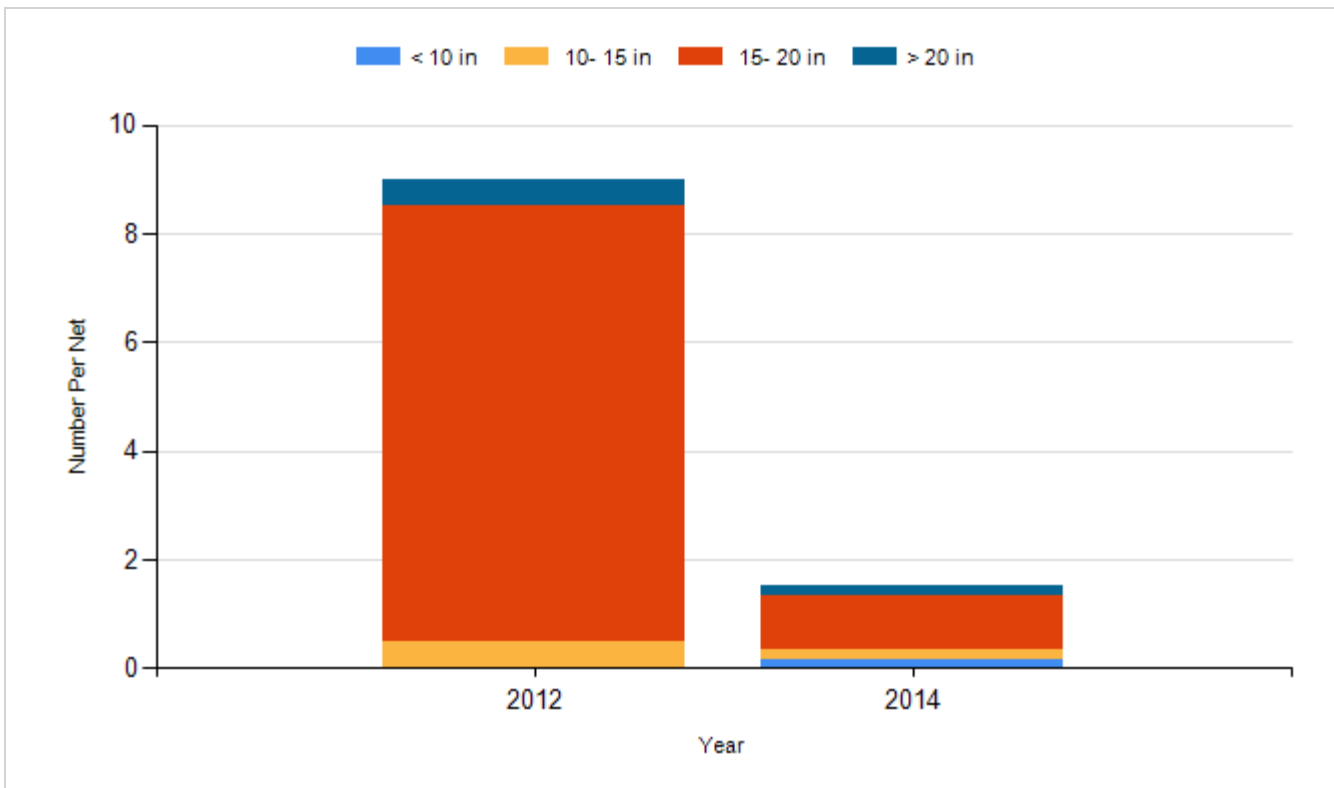
Historic Fish Sizes and Relative Abundance

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

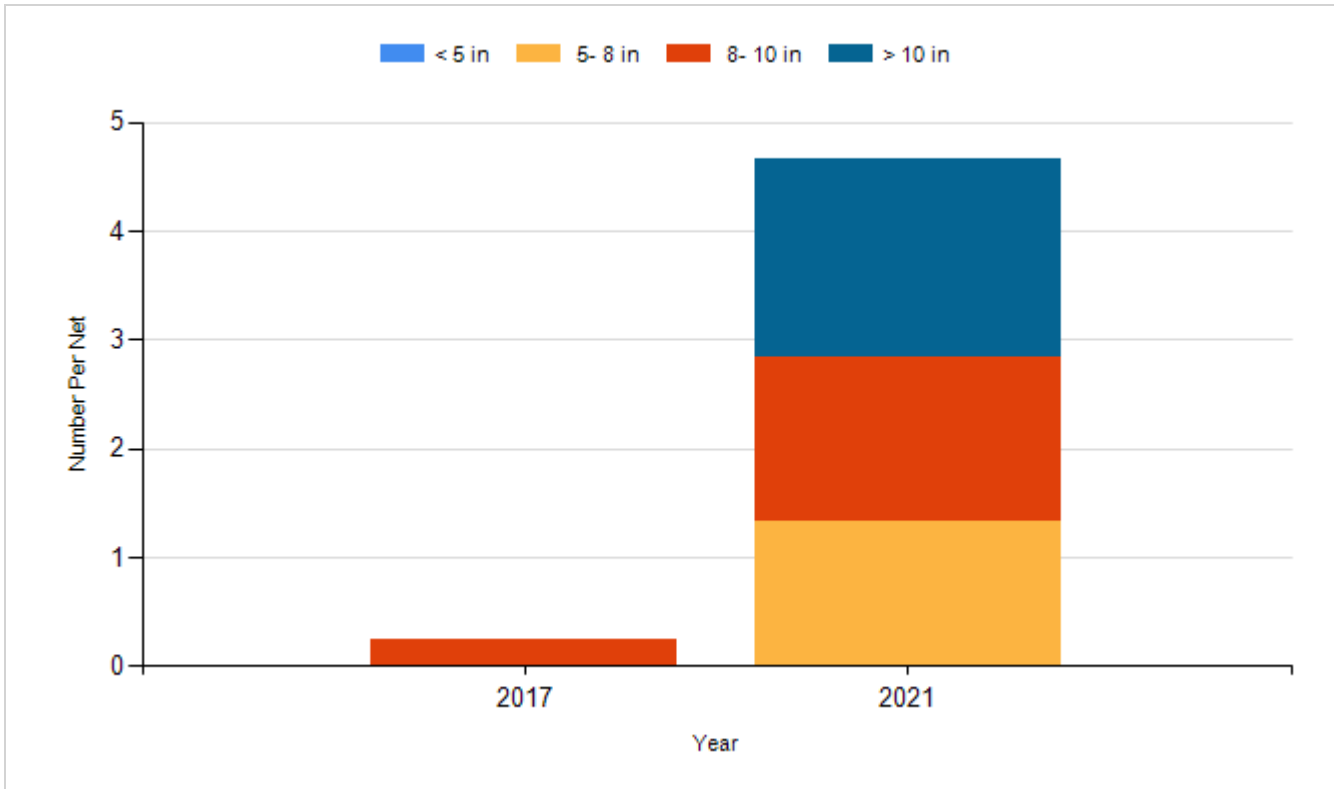
Species: Walleye
Gear: AFS std gill net



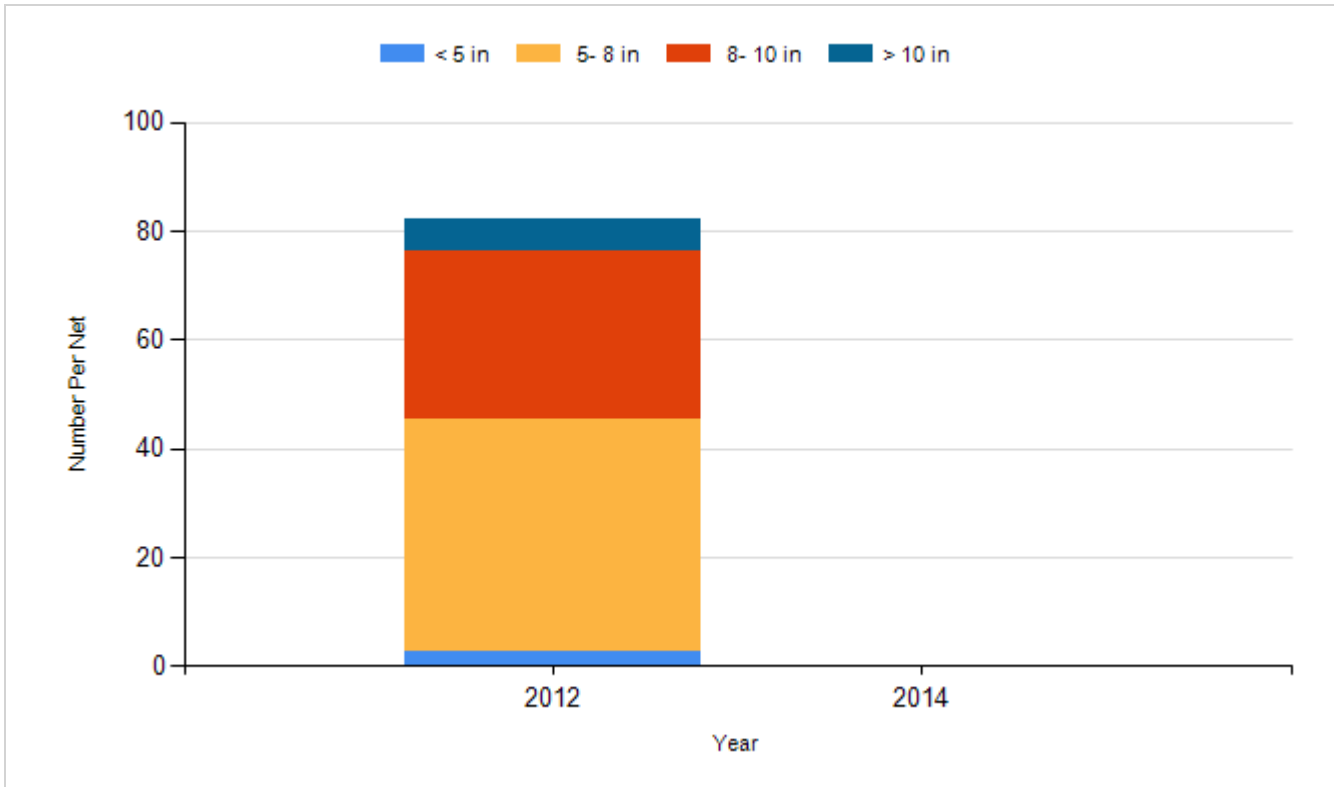
Species: Walleye
Gear: std exp gill net



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
2010	Walleye	Fry	2,800,000
2010	Yellow Perch	Small Fingerling	148,090
2012	Walleye	Fry	1,400,000
2014	Walleye	Fry	1,400,000
2015	Walleye	Fry	1,500,000
2015	Yellow Perch	Adult	3,750
2016	Yellow Perch	Small Fingerling	29,890
2017	Walleye	Fry	1,400,000
2019	Walleye	Fry	700,000
2021	Walleye	Fry	1,400,000