Minnewasta Lake Survey Summary

Minnewasta Lake, located 4.0 miles north and 2.0 miles west of Waubay, is managed as a northern pike, walleye, and yellow perch fishery; other fish species (e.g., white bass) are present and contribute to the fishery.

- **Northern pike.** Northern pike numbers were similar to those observed in 2021. At 2.1 per gill net, relative abundance was considered moderate to high in 2024. Northern pike from 20.5 to 31.9 inches were netted, 96% were ≥ 21.0 inches and 20% were ≥ 28 inches.

- **Walleye.** Fewer walleyes were sampled in 2024 than in 2021. The 2024 gill net CPUE of 2.8 suggested low to moderate relative abundance for Minnewasta. Sampled walleyes ranged in length from 8.3 to 29.1 inches, of those at least 10.0 inches, 85% were ≥ 15.0 inches and 38% were ≥ 20.0 inches. Ten year classes contributed to the catch, each was represented by seven or fewer individuals. The 2024 sample suggests good walleye growth with mean length at captures at age 3 and age 4 of 13.8 and 17.2 inches.

- **Yellow perch**. Yellow perch were the most abundant fish species in the 2024 gill net catch. At 15.8 per net, relative abundance was considered moderate to high. Sampled yellow perch ranged in length from 4.7 to 12.6 inches, of those at least 5.0 inches, 69% were ≥ 8.0 inches and 14% were ≥ 10 inches. Fish from six consecutive cohorts (2018 – 2023) were present. Those from the 2022 (age-2) year class were the most abundant accounting for 77% of yellow perch in the sample, while individuals from the 2012 (age-3) cohort made up an additional 15%. Growth appears to be good with age-3 yellow perch having mean length at capture of 9.6 inches in 2024.

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

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Minnewasta, Day County
UBS-Lake-411-705
2024

Lake Information

Name: Minnewasta

County: Day

Surface Area: 606 Acres

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jul 09, 2024	4 net-nights
AFS std gill net	Jul 10, 2024	4 net-nights
AFS std gill net	Jul 11, 2024	4 net-nights

Common Fish Species Present

Yellow Perch

Walleye

Northern Pike

White Sucker

Smallmouth Bass

Rock Bass

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	Northern Pike	25	2.1	0.5	96		20	13	80	2
	Rock Bass	1	0.1	0.1	100		0		106	
	Smallmouth Bass	3	0.3	0.2	100		67		105	6
	Walleye	37	2.8	0.8	85	10	38	13	86	1
	White Sucker	9	0.8	0.4	100		100		103	3
	Yellow Perch	190	15.8	2.1	69	5	14	4	117	7

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	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Avg
AFS std gill net	Black Bullhead				0.1			0.3			0.0	0.13
	Black Crappie				0.1			0.0			0.0	0.03
	Common Carp				0.4			0.2			0.0	0.20
	Northern Pike				0.8			2.7			2.1	1.87
	Rock Bass				0.2			0.2			0.1	0.17
	Smallmouth Bass				0.0			0.2			0.3	0.17
	Walleye				2.8			4.6			2.8	3.40
	White Bass				0.1			0.3			0.0	0.13
	White Sucker				0.9			0.4			0.8	0.70
	Yellow Perch				3.1			2.8			15.8	7.23
std exp gill net	Black Bullhead	1.7										1.70
	Northern Pike	0.2										0.20
	Walleye	0.8										0.80
	White Sucker	1.2										1.20
	Yellow Perch	1.7										1.70

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	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
AFS std gill net	Northern Pike	PSD				100			50			96
		PSD-P				30			22			20
		Wr				77			85			80
	Walleye	PSD				38			49			85
		PSD-P				9			5			38
		Wr				90			88			86
	Yellow Perch	PSD				92			70			69
		PSD-P				62			6			14
		Wr				110			114			117
std exp gill net	Northern Pike	PSD	0									
		PSD-P	0									
		Wr	72									
	Walleye	PSD	40									
		PSD-P	0									
		Wr	82									
	Yellow Perch	PSD	100									
		PSD-P	80									
		Wr	103									

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+
2024	37		241 (4)	351 (5)	438 (5)	454 (4)	508 (2)		535 (7)	562 (2)	626 (8)
2021	55	200 (1)	295 (6)	365 (27)	405 (7)	435 (7)	490 (5)				697 (2)
2018	38	196 (4)	285 (11)	341 (7)	380 (11)		454 (1)		539 (4)		
2015	5				317 (3)	389 (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+
2024	189	138 (4)	204 (145)	244 (29)	276 (8)	314 (1)	319 (2)				
2021	33		190 (13)	231 (20)							
2018	37	133 (2)	209 (6)	245 (10)		289 (2)	289 (4)	293 (8)	294 (3)	334 (1)	340 (1)
2015	10			215 (1)	283 (7)		317 (2)				

Fish Condition

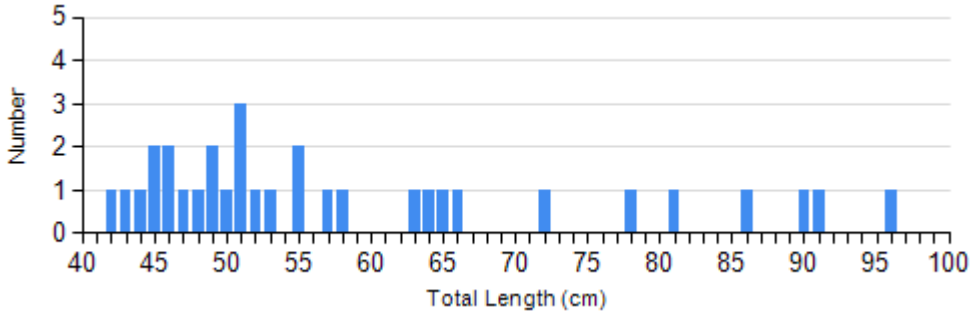
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	16	86 (1.8)	9	83 (1.9)	3	90 (3.6)	4	82 (4.0)
	2024	1	77	19	79 (1.5)	5	81 (1.7)	0	
Walleye Gill Net	2021	28	88 (1.0)	24	88 (0.9)	1	95	2	92 (2.8)
	2024	5	81 (1.5)	16	83 (0.8)	9	91 (1.7)	4	94 (1.1)
Yellow Perch Gill Net	2021	10	113 (1.7)	21	114 (1.7)	2	119 (7.0)	0	
	2024	58	113 (1.1)	105	111 (0.8)	23	155 (45.6)	3	103 (2.0)

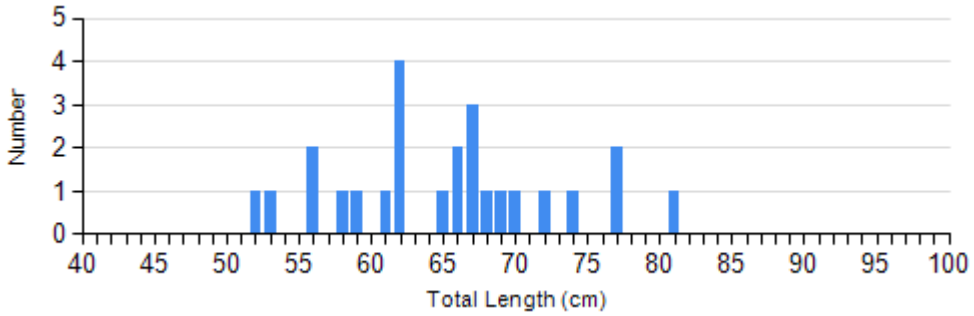
Length Frequency Distribution

Length frequency histogram of species sampled by year.

Species: Northern Pike
Gear: AFS std gill net

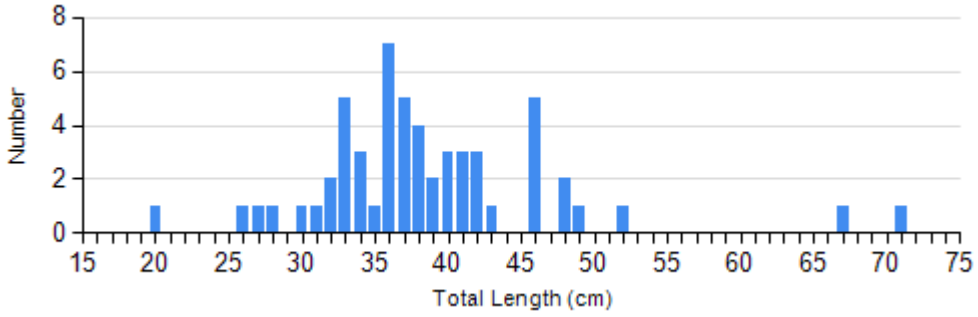


2021



2024

Species: Walleye
Gear: AFS std gill net



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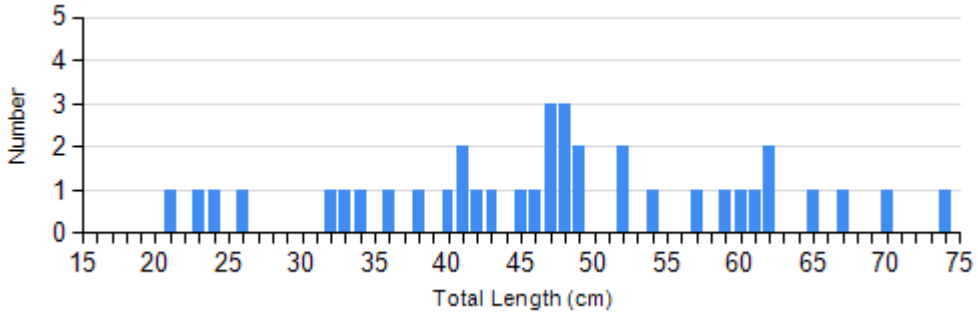
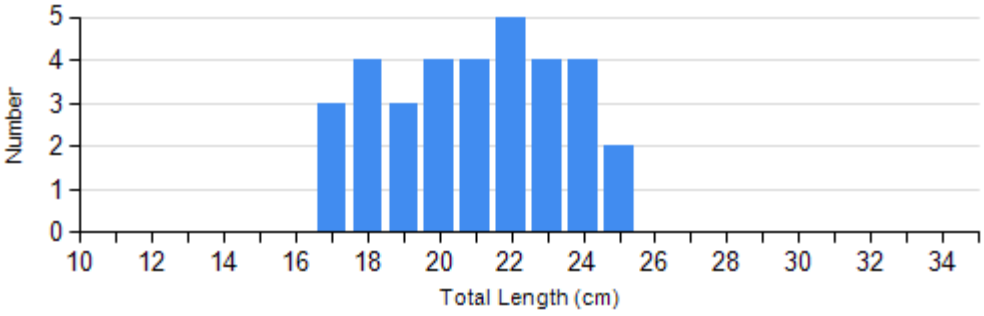
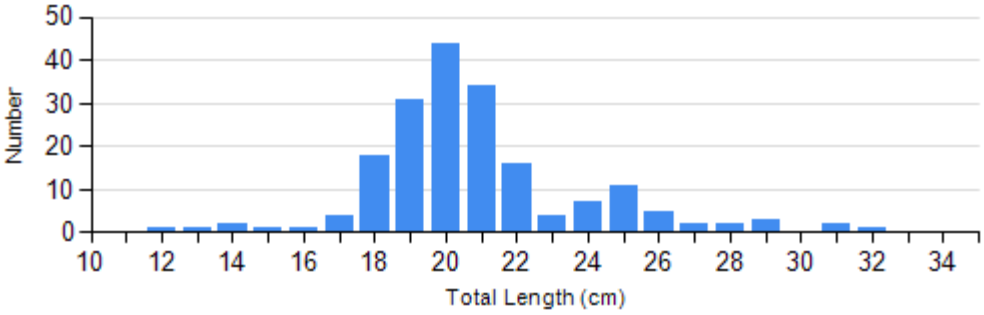


2024

Species: Yellow Perch
Gear: AFS std gill net



2021

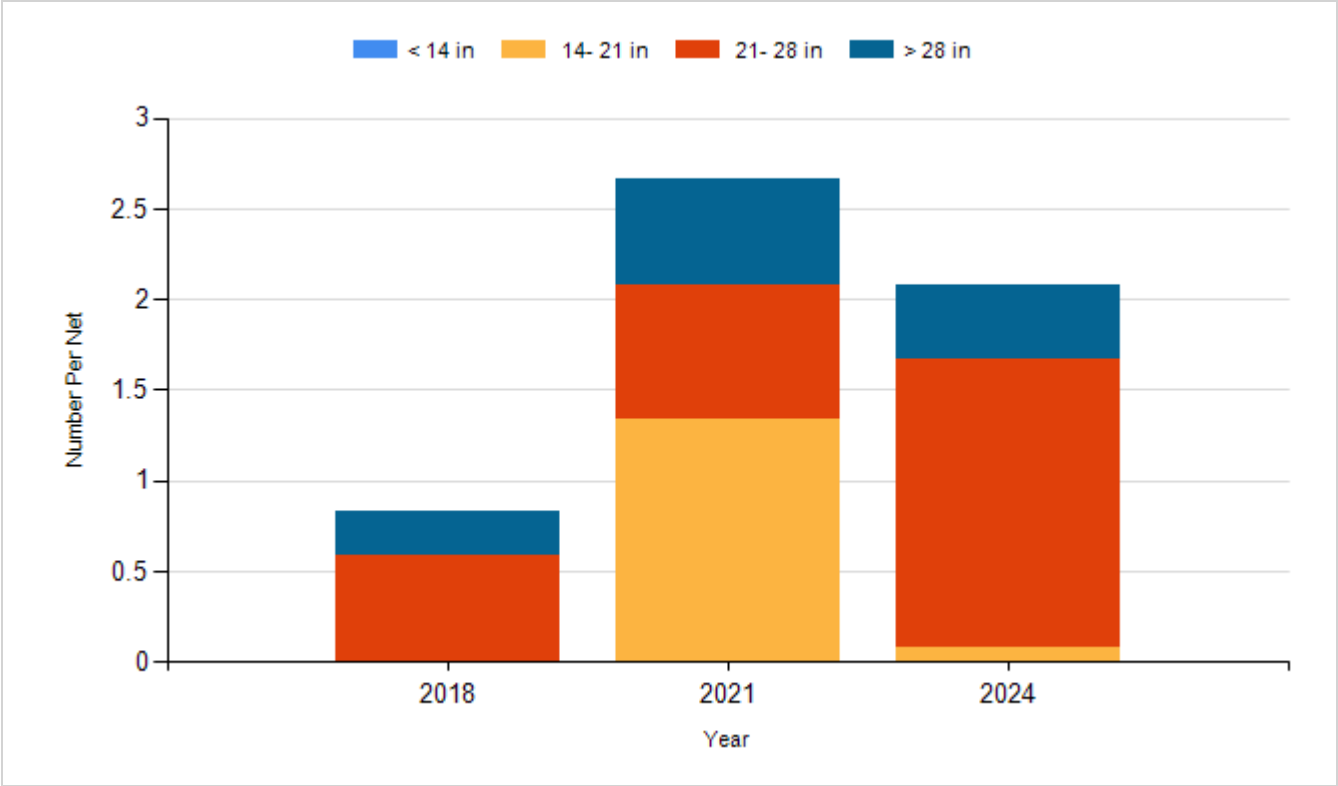


2024

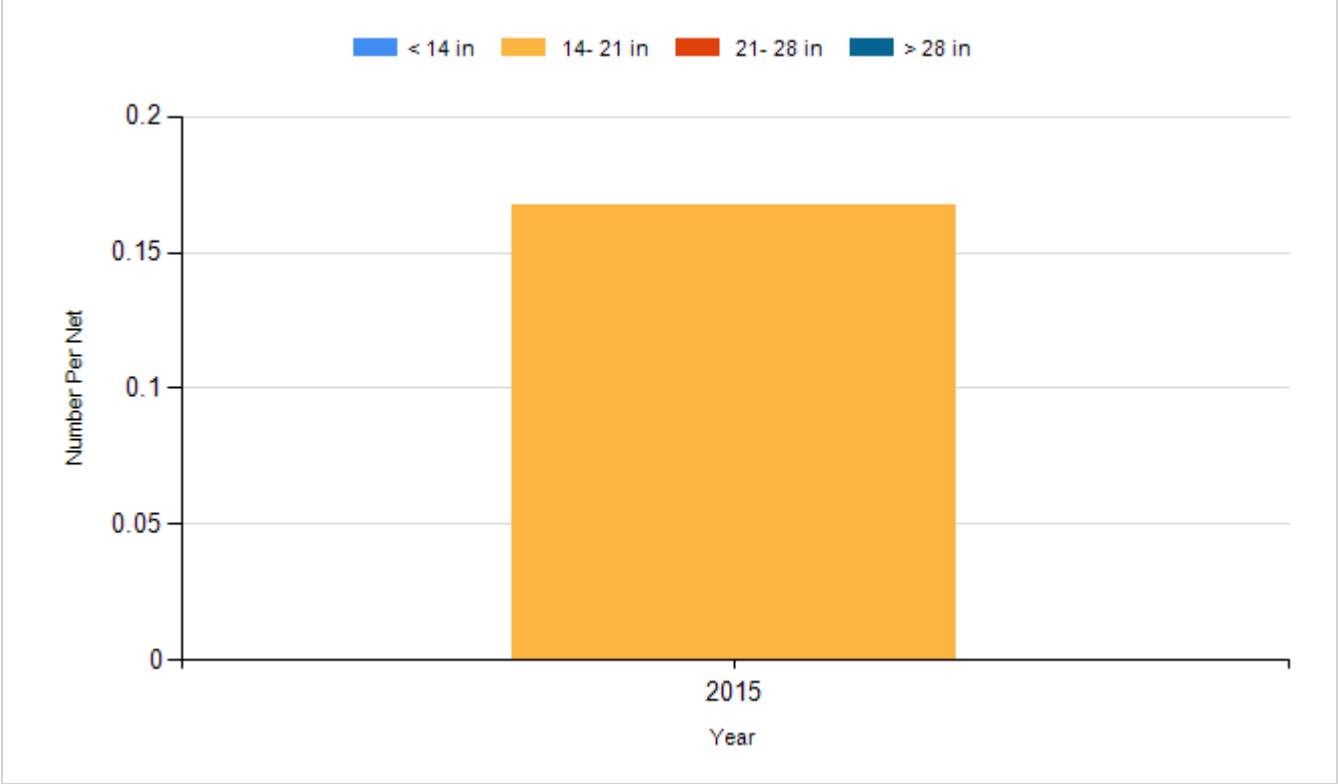
Historic Fish Sizes and Relative Abundance

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

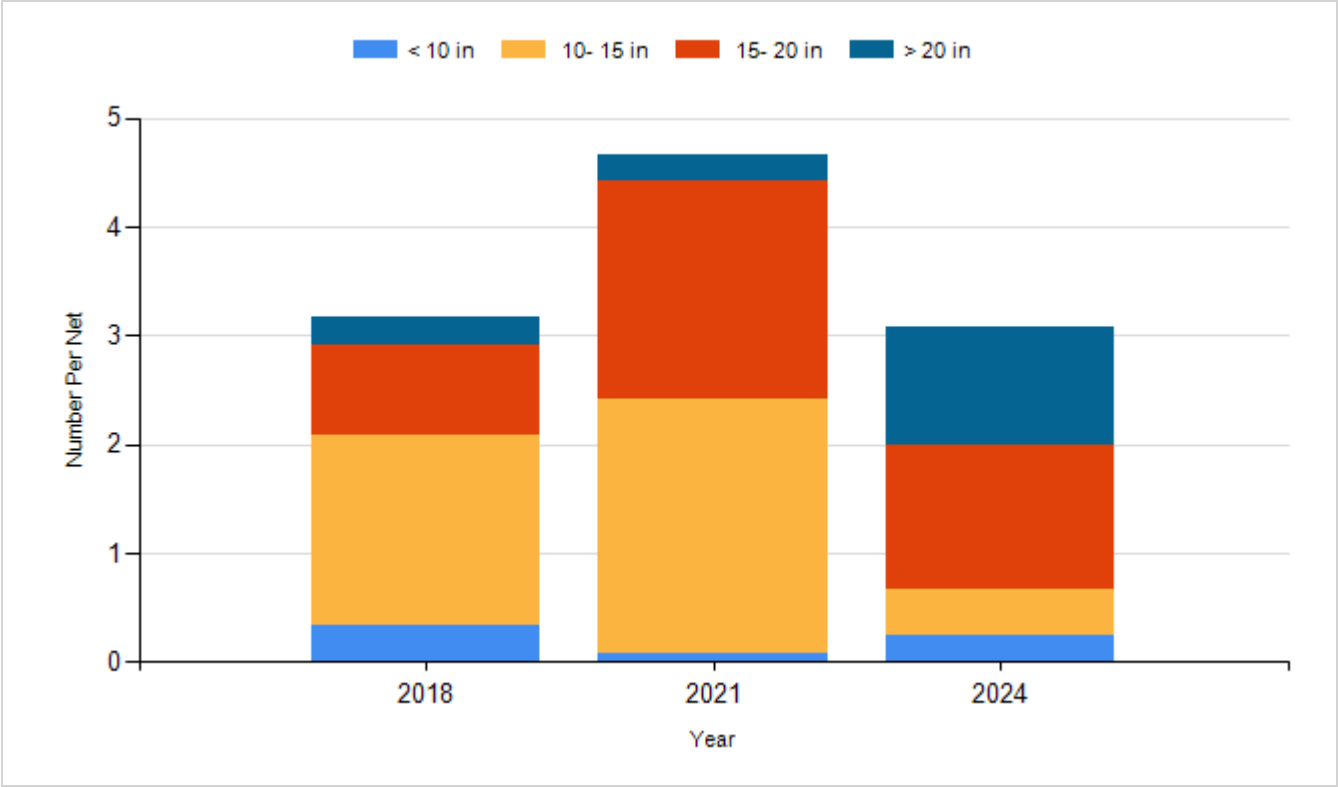
Species: Northern Pike
Gear: AFS std gill net



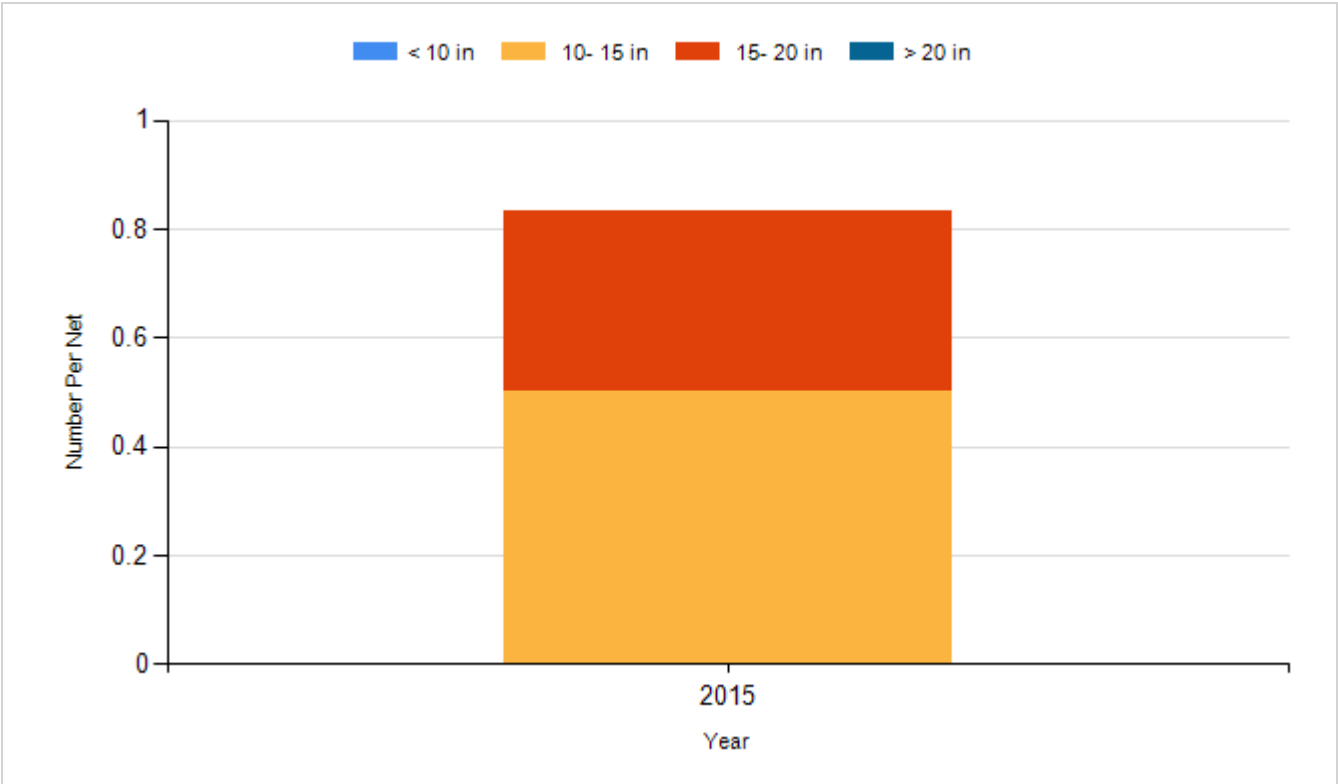
Species: Northern Pike
Gear: std exp gill net



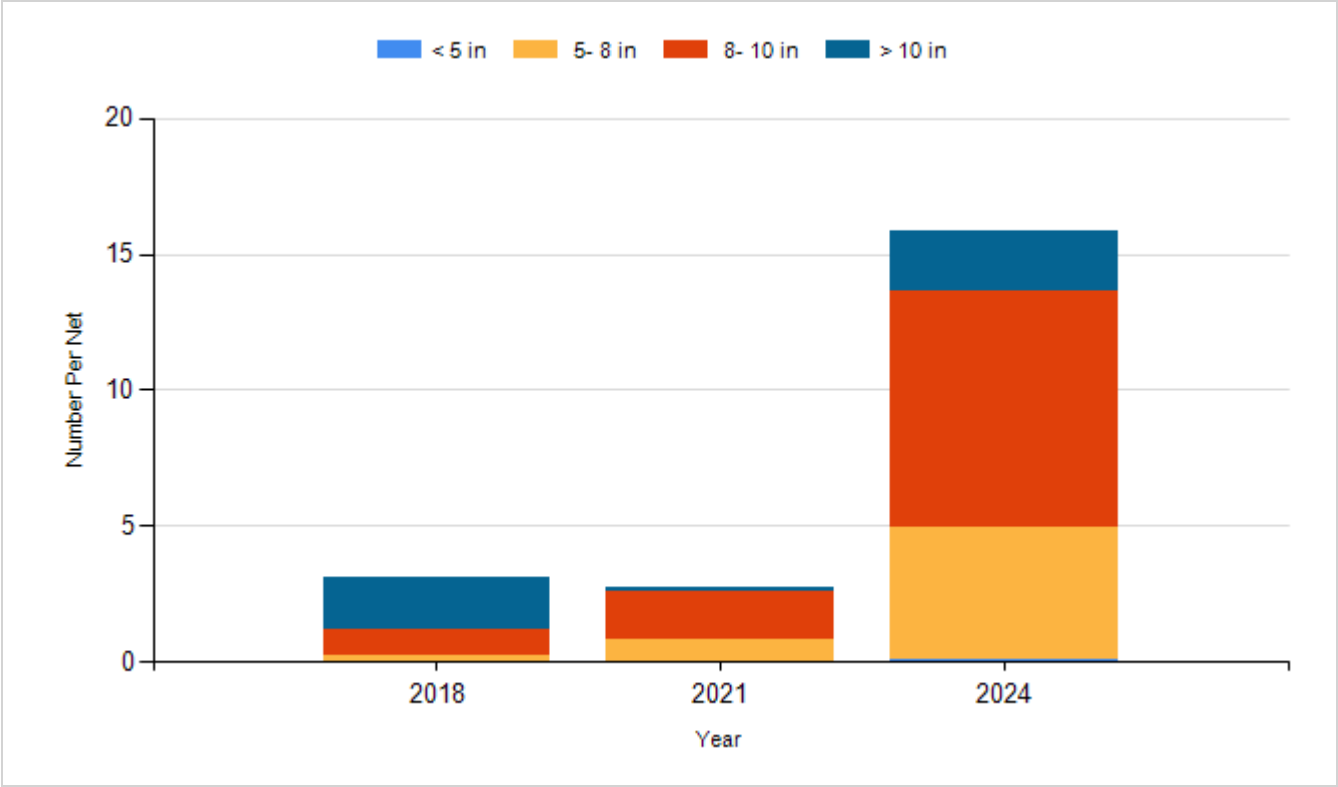
Species: Walleye
Gear: AFS std gill net



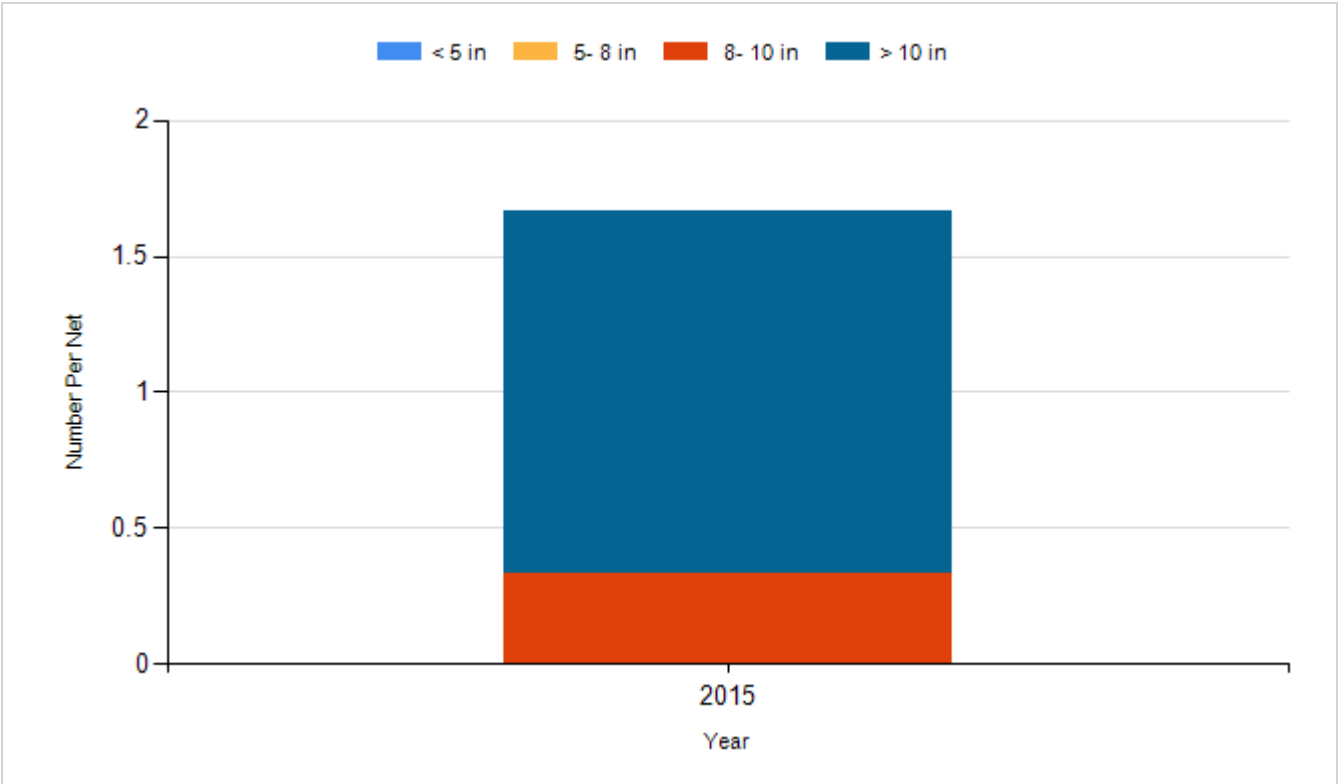
Species: Walleye
Gear: std exp gill net



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
2018	Yellow Perch	Fingerling	26,750
2019	Walleye	Fry	300,000
2021	Walleye	Fry	600,000
2023	Walleye	Fry	600,000