2024 Keisz Lake Survey Summary

Water: Keisz (Kiesz) Lake

County: McPherson

Legal Description: T128N R70W S7,8

GPS: 45.931 -99.202

Surface Area: 297 acres

Class: Warm Water Permanent

Maximum Depth: 18 feet

Mean Depth: 8 feet

Keisz (Kiesz) Lake is 297-acre natural lake 5.5 miles north of the town of Long Lake in north central McPherson County. A county gravel road from Long Lake to the North Dakota border provides access to the east edge of the lake. A primitive access location on the north end of the road grade provides opportunity to launch small to mid-sized boats and provides ice fishing access. There are no other public use facilities at Keisz Lake. Most of the angling pressure occurs during the ice-fishing season although open water fishing has increased at Keisz during the past 5 years.

Primary game fish managed at Keisz include Walleye and Yellow Perch. Northern Pike and Black Bullhead also have a historical and current presence at the lake. Recent Walleye stockings occurred in 2023, 2021, 2018 and 2016. Future stockings are planned biannually. A fish consumption advisory for elevated mercury levels on Walleye over 16 inches has been issued at Keisz Lake.

Keisz Lake was surveyed on June 23-25, 2024, utilizing ¾ inch standard frame net and AFS standard gill net sets. Walleye, Yellow Perch, Northern Pike, and Black Bullhead were observed during the 2024 survey.

- **Walleye:** Catch rates were relatively high with an average of 2.9 fish sampled per standard frame net and 7.8 per gill net set. Several larger adult walleyes were observed between 15 and 25 inches. A large year class of 8 inch fish from the 2023 stocking was also present. Condition was comparable to the state average. Growth rates were above average with Walleye reaching 16 inches at age 3.

- **Yellow Perch:** Perch numbers remained low with 4 fish sampled in 10 frame nets and 0 in 4 gill net sets. All fish observed were under 5 inches and likely from the 2022 or 2023 year class. The Yellow Perch population appears to remain suppressed through predation from moderately high walleye densities. Perch year classes at Keisz Lake tend to vary greatly based on success of reproduction and recruitment associated with seasonal water levels.

- **Other Species:** 2 Black Bullheads in 10 frame nets were observed with both fish being over 10 inches. Small bullheads likely have high mortality from predation as they are presumed a major prey source for adult Walleye. 1 Northern Pike was also sampled.

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

Keisz, McPherson County

WMC-Lake-1202-000

2024

Lake Information

Name: Keisz

County: McPherson

Surface Area: 297 Acres

Maximum Depth: 15 Feet

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jul 23, 2024	4 net-nights
frame net (std 3/4 in)	Jul 23, 2024	10 net-nights

Common Fish Species Present

Yellow Perch

Walleye

Northern Pike

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.
- 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	Walleye	31	0.5	0.5	100		0		85	4
frame net (std 3/4 in)	Black Bullhead	2	0.2	0.2	50		50		106	9
	Northern Pike	1	0.1	0.1	100		100		83	
	Walleye	20	0.7	0.5	100		57		83	3
	Yellow Perch	9	0.8	0.7	0		0		105	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**

		CPUE										
Gear	Species	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Avg
AFS std gill net	Black Bullhead				1.2			0.0			0.0	0.40
	Walleye				3.2			2.0			0.5	1.90
	Yellow Perch				4.3			14.5			0.0	6.27
fall night EF-WAE*	Walleye							68.0				68.00
frame net (std 3/4 in)	Black Bullhead				2.2			3.7			0.2	2.03
	Northern Pike				0.2			0.4			0.1	0.23
	Walleye				0.7			1.2			0.7	0.87
	Yellow Perch				0.9			0.2			0.8	0.63

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	Black Bullhead	PSD				86						
		PSD-P				57						
		Wr				115						
	Walleye	PSD				100			25			100
		PSD-P				32			0			0
		Wr				85			96			85
	Yellow Perch	PSD				15			17			
		PSD-P				0			0			
		Wr				104			108			
frame net (std 3/4 in)	Black Bullhead	PSD				95			54			50
		PSD-P				59			16			50
		Wr				107			104			106
	Northern Pike	PSD				100			100			100
		PSD-P				100			25			100
		Wr				90			90			83
	Walleye	PSD				86			50			100
		PSD-P				29			33			57
		Wr				86			92			83
	Yellow Perch	PSD				11			0			0
		PSD-P				0			0			0
		Wr				103			99			105

Back-Calculated Lengths

Mean species back-calculated total length (mm) at age, standard error (SE), and sample size (N).

Species: Walleye

Year Class	Age	N	Mean back-calculated length (SE) at age									
			1	2	3	4	5	6	7	8	9	10
2023	1	1	96									
2023	1	11	113 (6.8)									
2022	2	4	119 (6.3)	163 (8.4)								
2022	2	5	106 (6)	146 (14.2)								
2019	5	1	180	218	297	339	378					
2019	5	3	162 (52.6)	218 (66.7)	283 (75.6)	365 (71.2)	431 (51.1)					
2018	6	1	217	256	333	373	435	466				
2018	6	4	122 (12.8)	180 (15.3)	227 (23)	276 (20.2)	326 (16.7)	415 (24.9)				
Weighted Mean		30	124	179	265	323	379	425				

Year Class	Age	N	11	12	13	14	15	16	17	18	19	20
2023	1	1										
2023	1	11										
2022	2	4										
2022	2	5										
2019	5	1										
2019	5	3										
2018	6	1										
2018	6	4										
Weighted Mean		30										

Species: Yellow Perch

Year Class	Age	N	Mean back-calculated length (SE) at age									
			1	2	3	4	5	6	7	8	9	10
2022	2	5	77 (4.3)	100 (3.9)								
2021	3	4	79 (4.2)	104 (1.9)	136 (1.3)							
Weighted Mean		9	78	102	136							

Year Class	Age	N	11	12	13	14	15	16	17	18	19	20
2022	2	5										
2021	3	4										
Weighted Mean		9										

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	31	202 (22)	215 (8)			405 (1)	496 (1)				
2021	5		227 (1)	266 (3)		380 (1)					
2018	25		212 (6)				431 (5)		487 (5)	533 (4)	543 (5)

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	29	138 (18)	179 (2)	197 (4)	199 (2)	204 (2)		225 (1)			
2018	26		164 (9)	189 (17)							

Fish Condition

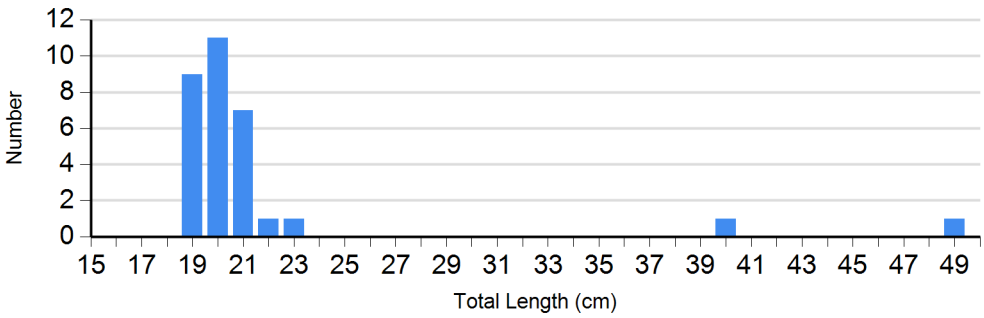
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2021	3	96 (4.0)	1	98	0		0	
	2024	0		2	85 (3.2)	0		0	
Yellow Perch Gill Net	2021	24	109 (2.2)	5	105 (2.5)	0		0	

Length Frequency Distribution

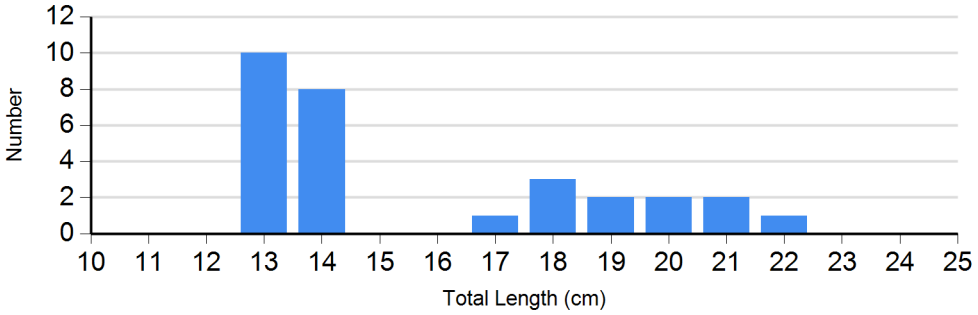
Length frequency histogram of species sampled by year.

Species: Walleye
Gear: AFS std gill net



2024

Species: Yellow Perch
Gear: AFS std gill net

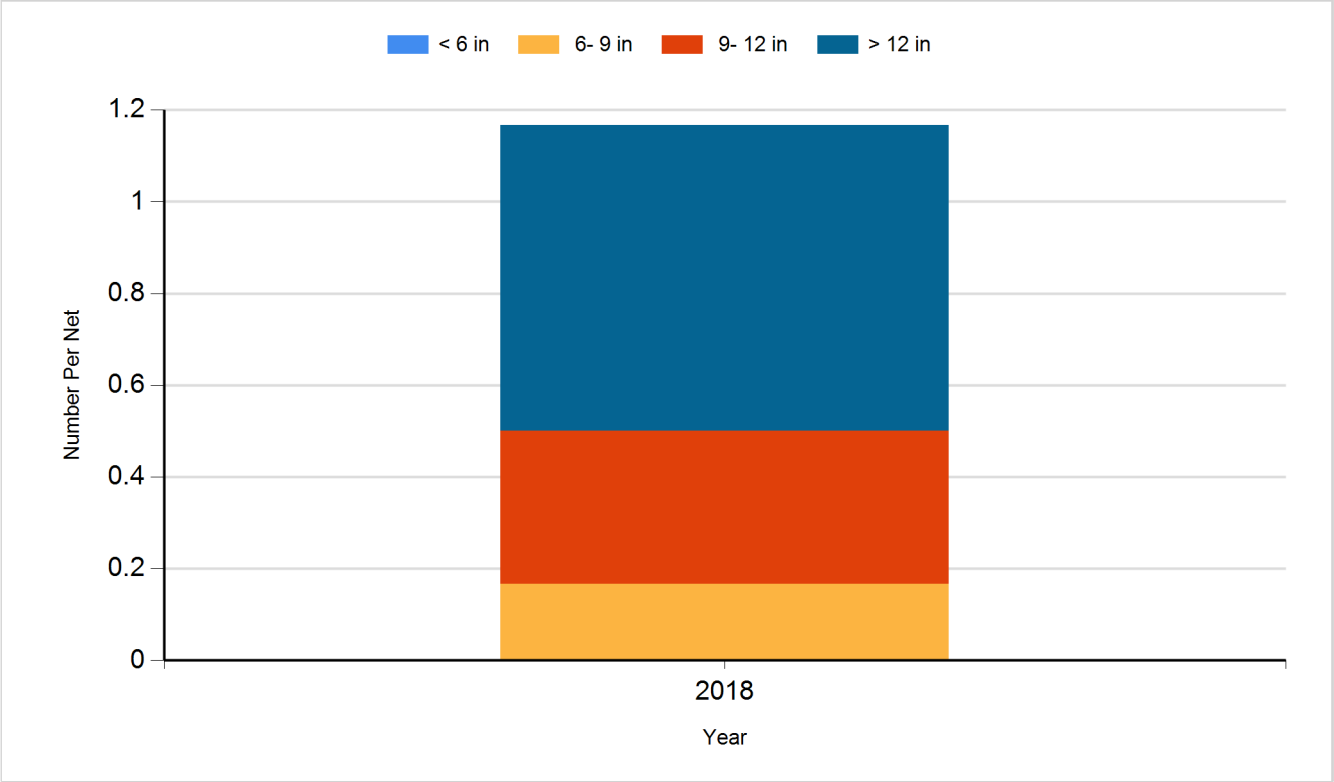


2021

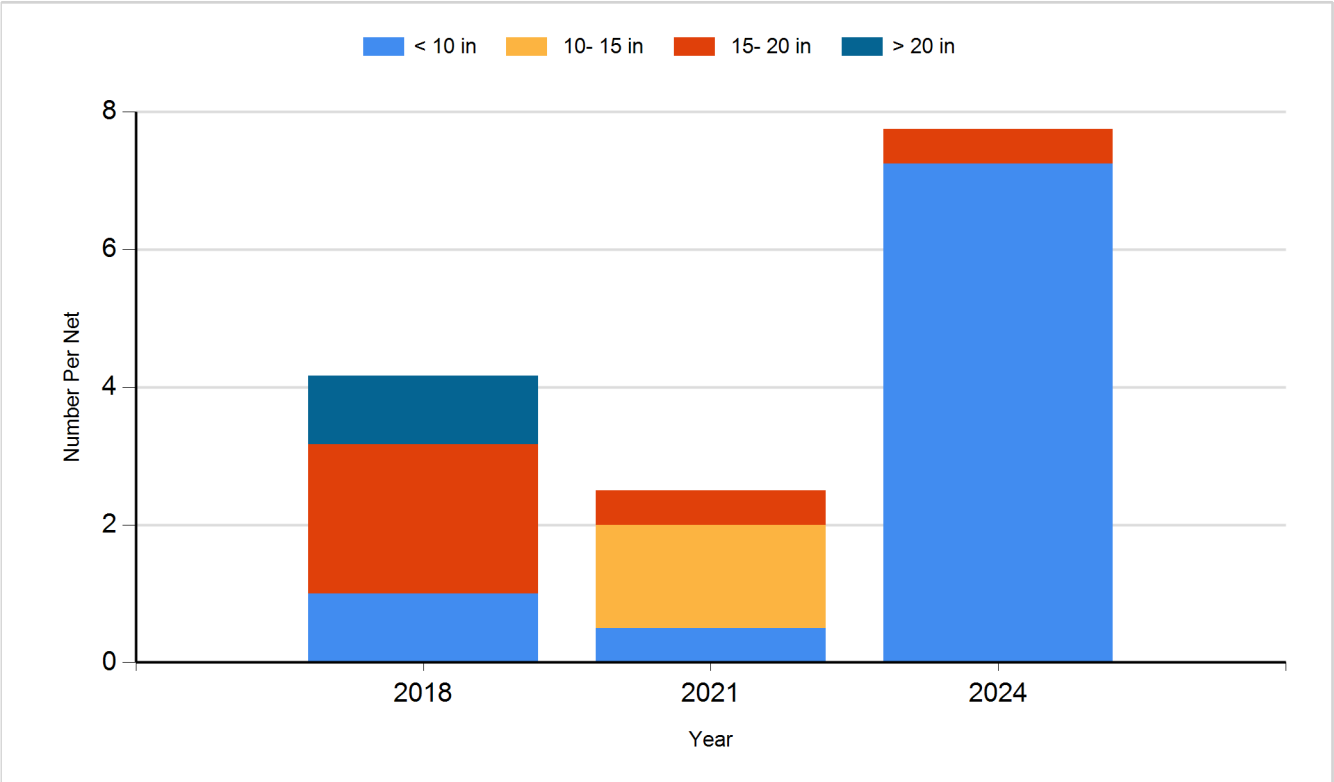
Historic Fish Sizes and Relative Abundance

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

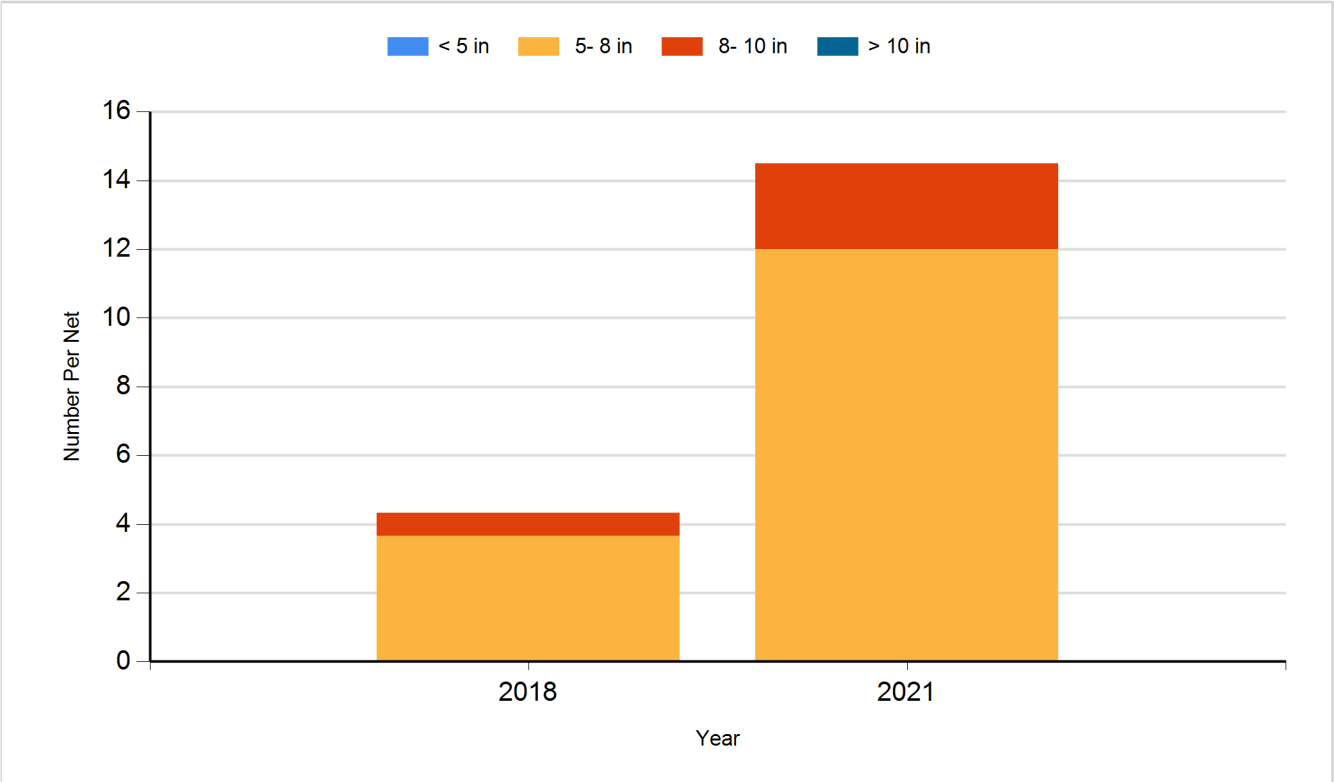
Species: Black Bullhead
Gear: AFS std gill net



Species: Walleye
Gear: AFS std gill net



Species: Yellow Perch
Gear: AFS std gill net



Fish Stocking

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

Year	Species	Size	Number
2014	Walleye	Fry	130,000
2016	Walleye	Small Fingerling	27,940
2018	Saugeye	Small Fingerling	22,040
2021	Walleye	Fry	200,000
2023	Walleye	Fry	200,000