

# Fisheries Branch Report

## Rock Lake Index Netting Assessment Summary

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Economic Development, Investment,  
Trade and Natural Resources  
2024

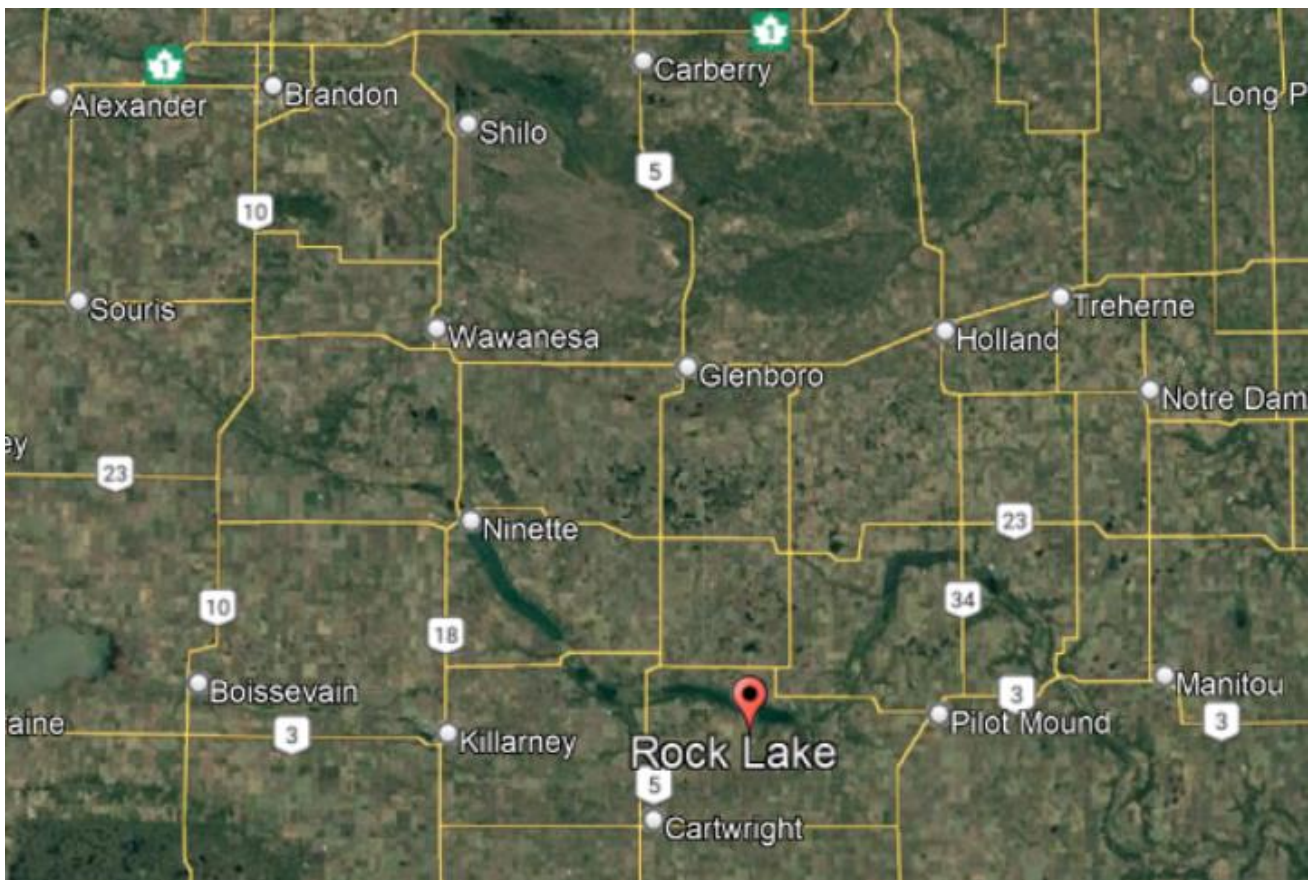
## Introduction

Fisheries staff carried out an assessment in 2023 on Rock Lake using North American Standard gillnet protocol as part of a biennial schedule for southwestern lakes. The index netting program began in 1998 with the goal providing an inventory of species composition and walleye population health every 4-5 years on the following waters: Pelican Lake, Rock Lake, Lake Wahtopanah, Oak Lake, and Lake of the Prairies. Our objective is to provide a summary of the assessments and to evaluate the success of the supplemental stocking of walleye fry and fingerlings.

Fisheries has been assessing fish populations for decades using a variety of netting standards/techniques. Gill nets are typically used, as they are an effective tool, especially on large lakes where the amount of fish mortality will not negatively affect fish populations.

## **Overview**

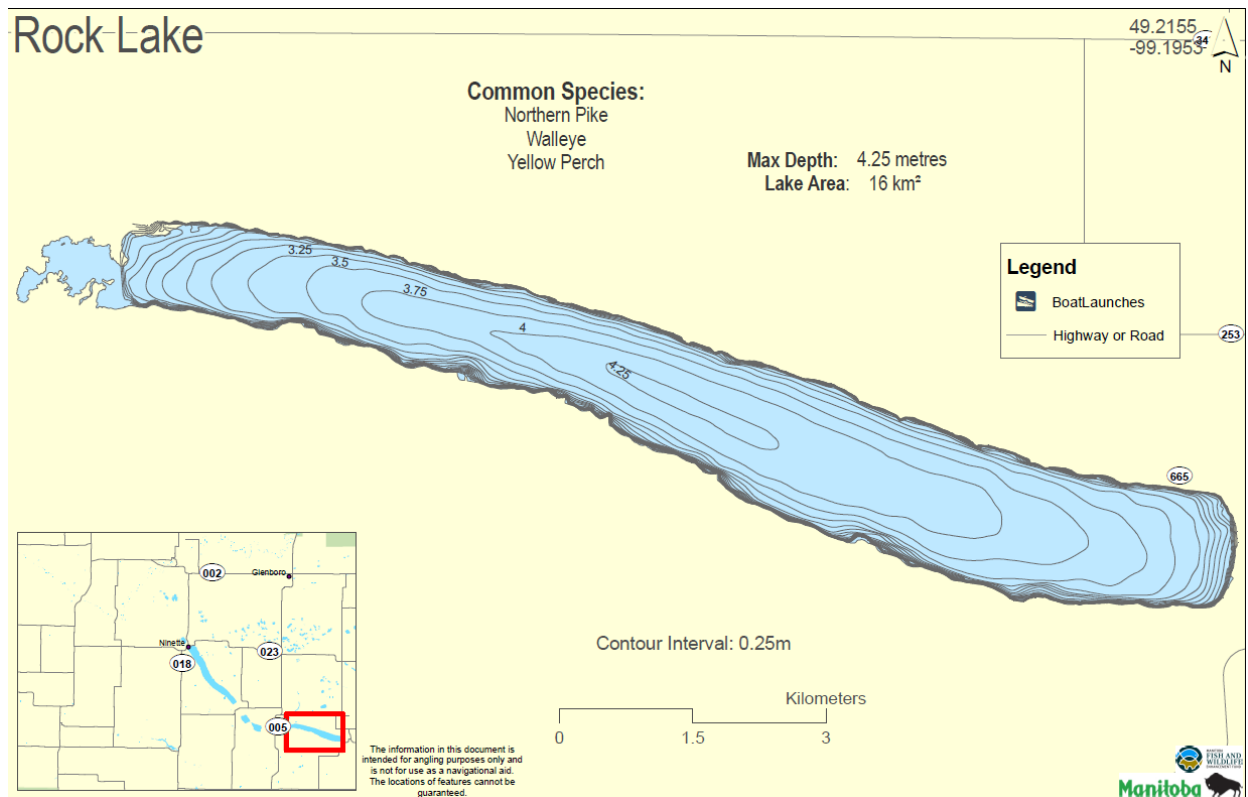
Rock Lake is a large recreationally fished lake along the Pembina River in the southwestern portion of Manitoba along PR 253 and PR 5 located south of Glenora, MB (see *Figure 1*).



**Figure 1:** Map location of Rock Lake.

Rock Lake is approximately 15.5 kilometres long orientated from west to east (Figure 2), located in an agricultural area within the Pembina River valley. The lake is situated downstream of Pelican Lake and upstream of Swan Lake.

Rock Lake is a shallow, eutrophic waterbody that at full supply elevation has a surface area of 1494.0 hectares, a mean depth of 1.9 meters and a maximum depth of 3.0 meters. It receives its water from the Pembina River that enters from the west end and exits at the east end. Water levels at Rock Lake are artificially maintained by a control structure on the Pembina River downstream of the lake. The structure is licenced to maintain water levels at 1329.0 feet above sea level. Rock Lake is, in essence, an expanded "riverine fishery" of the Pembina River. The net set location depths ranged from 0.6 meters to 2.6 meters with an average of 1.6 meters.



**Figure 2:** Bathymetry map, location, and orientation of Rock Lake.

## Methods

Gillnets with mesh sizes of 1.5", 2", 2.5", 3", 3.5", 4", 4.5" and 5" were set overnight from June 20<sup>th</sup> to June 22<sup>nd</sup> at 5 historic netting locations. All nets were set perpendicular to shore at a maximum depth of 2.6 meters. The number of nets set during a survey influences the reliability of the catch-per-unit-effort (CPUE) statistic. The status of walleye populations, as determined from a detailed assessment of biological parameters, can often be assessed from a sample of around 250 walleye. However, the sampling effort has not typically been increased to reach this target, rather it serves as a level at which time netting efforts can cease. Nets were retrieved and returned to shore where fishes were removed, sorted and biological data were collected. All walleye and northern pike were sampled for fork and total length, round weight, and additional biological data collected included: sex, sexual maturity, and aging structures taken. Combined weight (g) was recorded for other fish collected.

## Stocking

Rock Lake has been stocked since the early 1900's with records starting in 1924, including a variety of species as follows:

**Table 1:** History of stocking efforts in Rock Lake

<b>Year</b>	<b>Species</b>	<b>Number</b>	<b>Size</b>
2024	WALLEYE	1,000,000 + 99	Fry + fingerling
2023	WALLEYE	1,000,000 + 125	Fry + fingerling
2022	WALLEYE	200,000	Fry
2021	WALLEYE	1,300,000	Fry
2020	WALLEYE	1,200,000 +303	Fry + fingerling
2019	WALLEYE	1,200,000	Fry
2018	WALLEYE	500,000	Fry
2017	WALLEYE	1,500,000	Fry
2016	WALLEYE	700,000	Fry
2015	WALLEYE	1,000,000	Fry
2014	WALLEYE	1,000,000	Fry
2013	WALLEYE	500,000	Fry
2010	WALLEYE	300,000	Fry
2008	WALLEYE	800,000	Fry
2007	WALLEYE	600,000	Fry
2006	WALLEYE	650,000	Fry
2005	WALLEYE	600,000	Fry
2004	WALLEYE	600,000	Fry
2002	WALLEYE	400,000	Fry
1997	WALLEYE	450,000	Fry
1995	NORTHERN PIKE	500,000	Fry
1995	NORTHERN PIKE	500,000	Fry
1994	WALLEYE	500,000	Fry
1993	WALLEYE	500,000	Fry
1992	WALLEYE	200,000	Fry
1991	WALLEYE	500,000	Fry
1991	WALLEYE	500,000	Fry
1990	WALLEYE	500,000	Fry
1990	WALLEYE	500,000	Fry
1989	YELLOW PERCH	10,000	>1 year
1989	WALLEYE	700,000	Fry
1987	WALLEYE	200,000	Fry

1986	WALLEYE	200,000	Fry
1985	WALLEYE	100,000	Egg
1985	YELLOW PERCH	5,000	Adult (>30 cm)
1985	NORTHERN PIKE	450	Adult (>30 cm)
1983	WALLEYE	100,000	Fry
1982	YELLOW PERCH	5,000	Adult (>30 cm)
1982	WALLEYE	100,000	Fry
1979	NORTHERN PIKE	350	Adult (>30 cm)
1979	YELLOW PERCH	10,200	Adult (>30 cm)
1979	WALLEYE	50,000	Fry
1978	YELLOW PERCH	2,500	Adult (>30 cm)
1977	NORTHERN PIKE	3,000	Adult (>30 cm)
1977	YELLOW PERCH	6,000	Adult (>30 cm)
1975	YELLOW PERCH	5,000	Adult (>30 cm)
1974	YELLOW PERCH	8,000	Adult (>30 cm)
1970	NORTHERN PIKE	1,000	Adult (>30 cm)
1970	YELLOW PERCH	6,000	Adult (>30 cm)
1969	NORTHERN PIKE	950	Adult (>30 cm)
1968	NORTHERN PIKE	600	Adult (>30 cm)
1968	YELLOW PERCH	3,500	Adult (>30 cm)
1967	NORTHERN PIKE	840	Adult (>30 cm)
1963	WALLEYE	500,000	Egg
1959	WALLEYE	500,000	Egg
1957	WALLEYE	1,000,000	Egg
1956	WALLEYE	100	Adult (>30 cm)
1956	NORTHERN PIKE	200	Adult (>30 cm)
1956	WALLEYE	1,000,000	Egg
1955	WALLEYE	170,000	Egg
1954	WALLEYE	850,000	Egg
1953	WALLEYE	680,000	Egg
1952	NORTHERN PIKE	400	Adult (>30 cm)
1952	YELLOW PERCH	5,000	Adult (>30 cm)
1950	WALLEYE	510,000	Egg
1949	WALLEYE	510,000	Egg
1949	YELLOW PERCH	1,000	Adult (>30 cm)
1948	WALLEYE	510,000	Egg

1948	LARGEMOUTH BASS	25	Adult (>30 cm)
1947	WALLEYE	510,000	Egg
1946	LARGEMOUTH BASS	105	Adult (>30 cm)
1946	WALLEYE	525,000	Fry
1944	WALLEYE	800,000	Fry
1941	WALLEYE	150,000	Fry
1937	WALLEYE	150,000	Fry
1936	WALLEYE	200,000	Fry
1935	WALLEYE	250,000	Fry
1934	WALLEYE	150,000	Fry
1930	WALLEYE	100,000	Fry
1929	WALLEYE	125,000	Fry
1928	WALLEYE	150,000	Fry
1927	WALLEYE	225,000	Fry
1925	WALLEYE	120,000	Fry
1924	WALLEYE	300,000	Fry

## Results

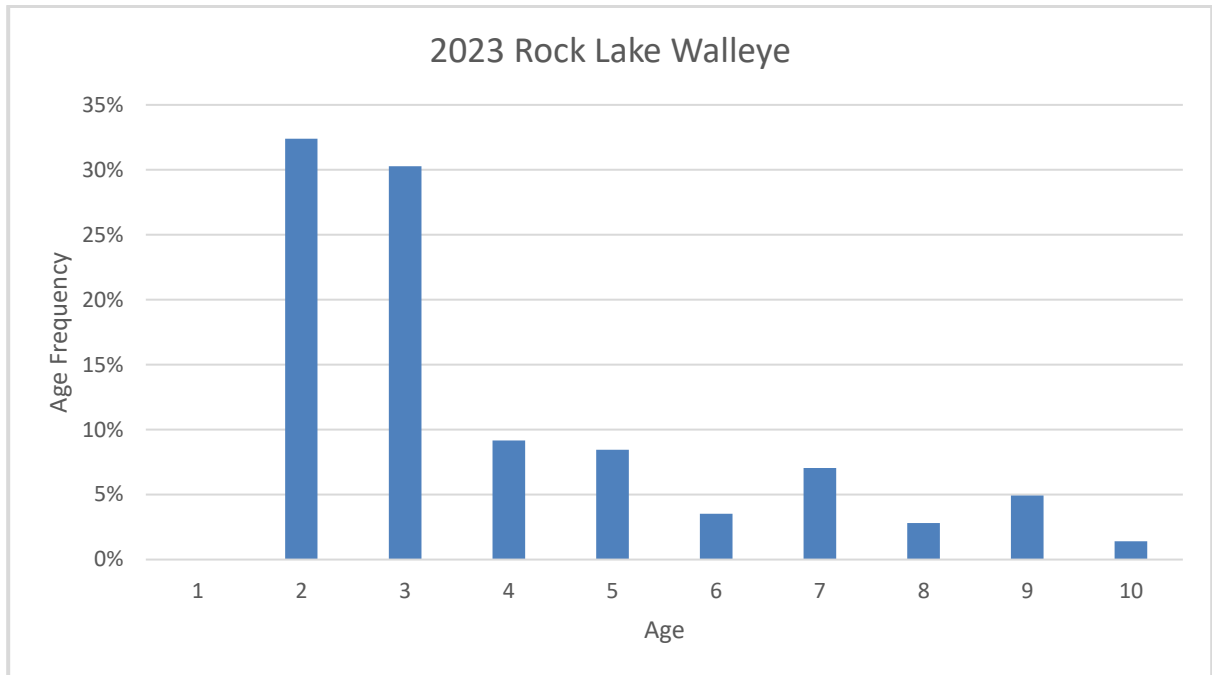
A total of 495 fish were captured in the 5 gill nets set during the 2023 Rock Lake index assessment. The most captured species was white sucker, followed by walleye and yellow perch. (Table 2).

**Table 2. 2023 Rock Lake species catch composition by location.**

	Bear Hollow	Bullhead Point	Kristy Point	Pembina River West	Rearing Pond Point	<b>Grand Total</b>
<b>Northern Pike</b>	7	2	3	0	1	13
<b>Walleye</b>	50	41	18	19	19	147
<b>White Sucker</b>	31	38	67	60	43	241
<b>Yellow Perch</b>	9	15	11	4	4	43
<b>Brown Bullhead</b>	13	4	3	0	0	21
<b>Common Carp</b>	5	6	4	1	1	18
<b>Channel Catfish</b>	3	1	1	1	2	9
<b>Shorthead Redhorse</b>	0	1	1	0	0	2
<b>Grand Total</b>	118	108	108	84	70	495

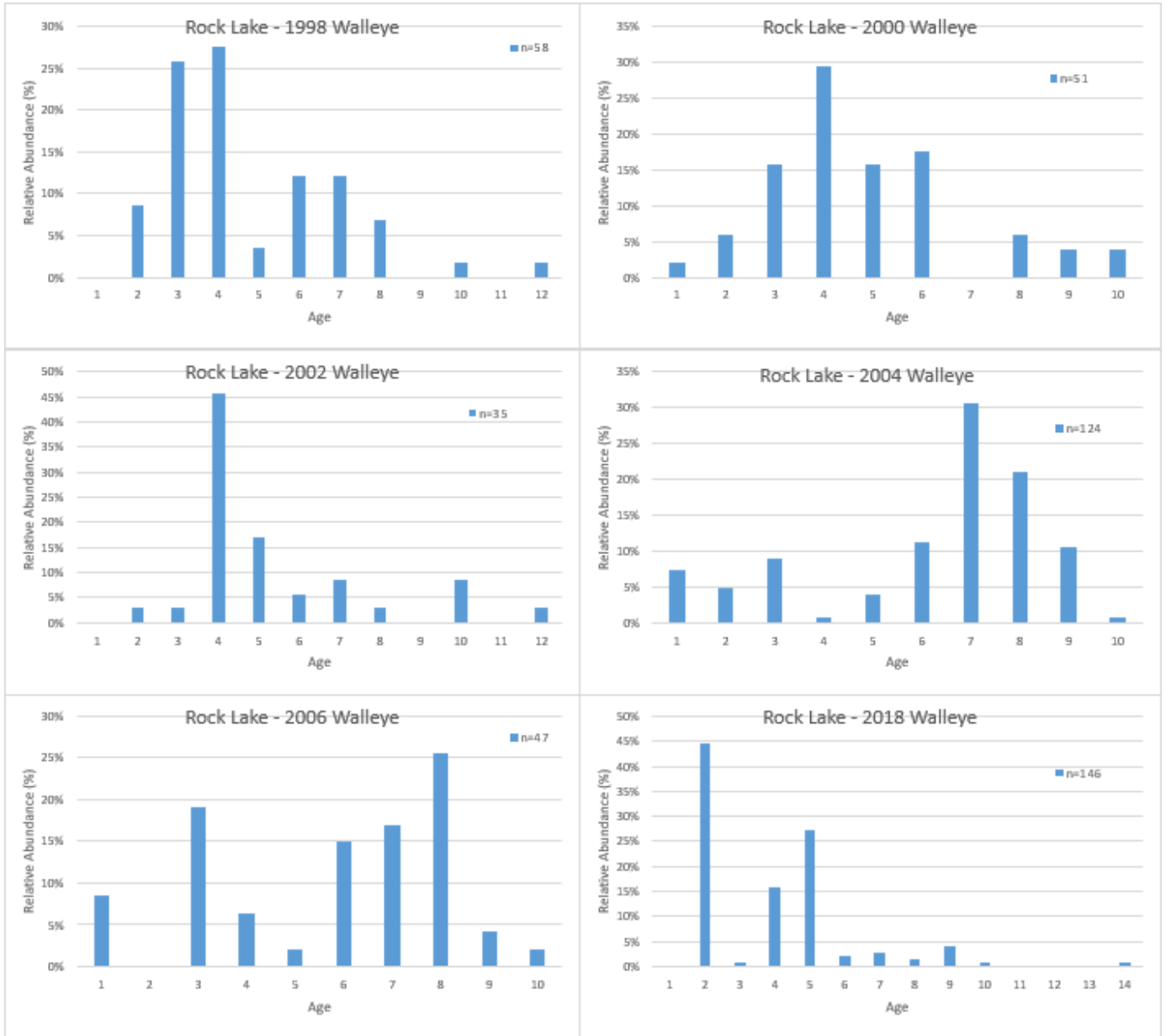
During the 2023 index netting program, 147 walleye, 13 northern pike and 43 yellow perch, were captured, which are the main sportfish angled in the lake. The mean walleye catch-per-unit-effort (CPUE) was 23.4 walleye per 100 yards of net which remains consistent with the CPUE from 2018 of 23.4 (Figure 10). The average age of walleye caught was 3.86 years. There were 9 age-

classes of walleye caught during the 2023 index assessment. The age class frequency of the walleye population is typical of other recreational lakes in the south that rely on stocking (see Figure 3).



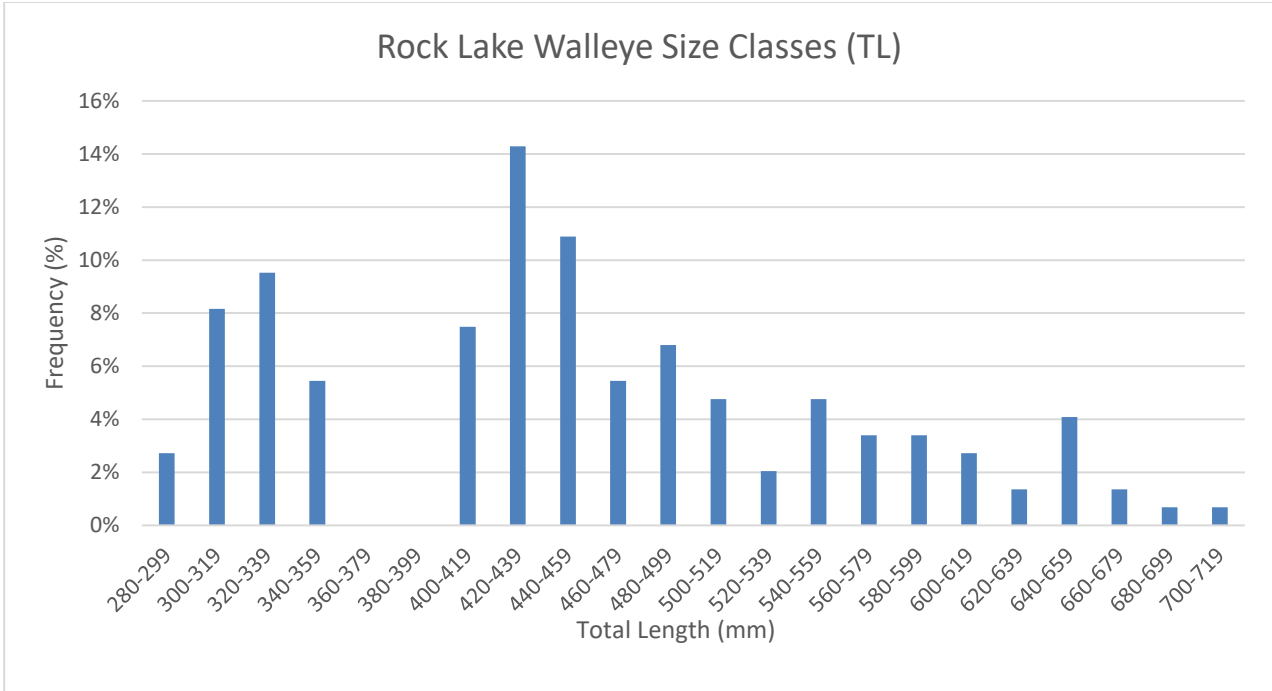
**Figure 3.** Walleye age class frequency from 2023 index netting.

In 2023, average weight of walleye was 1086 g (210-3480 g, n=146). Size classes were quite variable between the years, as seen in Figure 4, possibly due to the nature of the lake being heavily supplemented by stocking of walleye fry on an annual basis, in which the volume and quality of the fry vary from year to year.



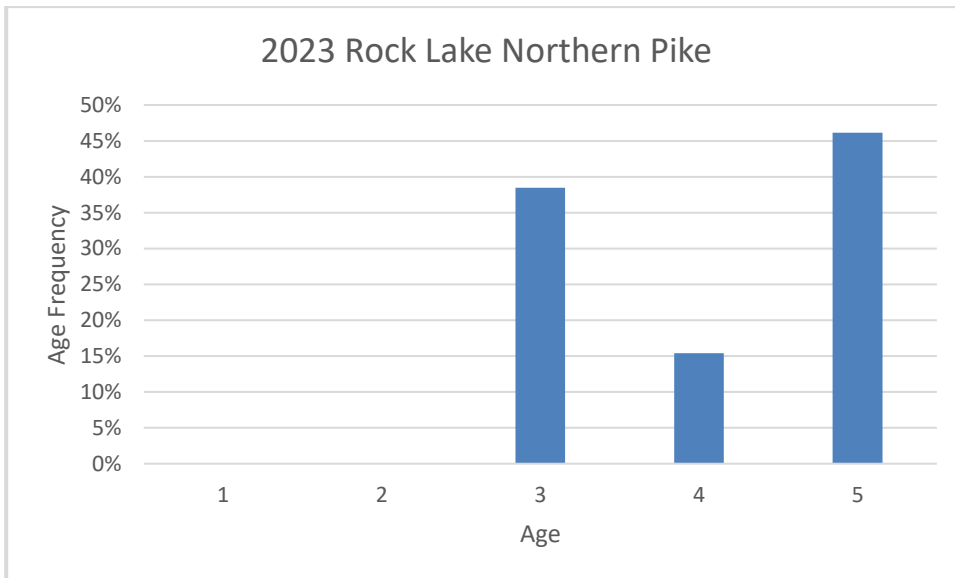
**Figure 4.** Historic walleye age class frequency from 1998 to 2018 index netting programs.



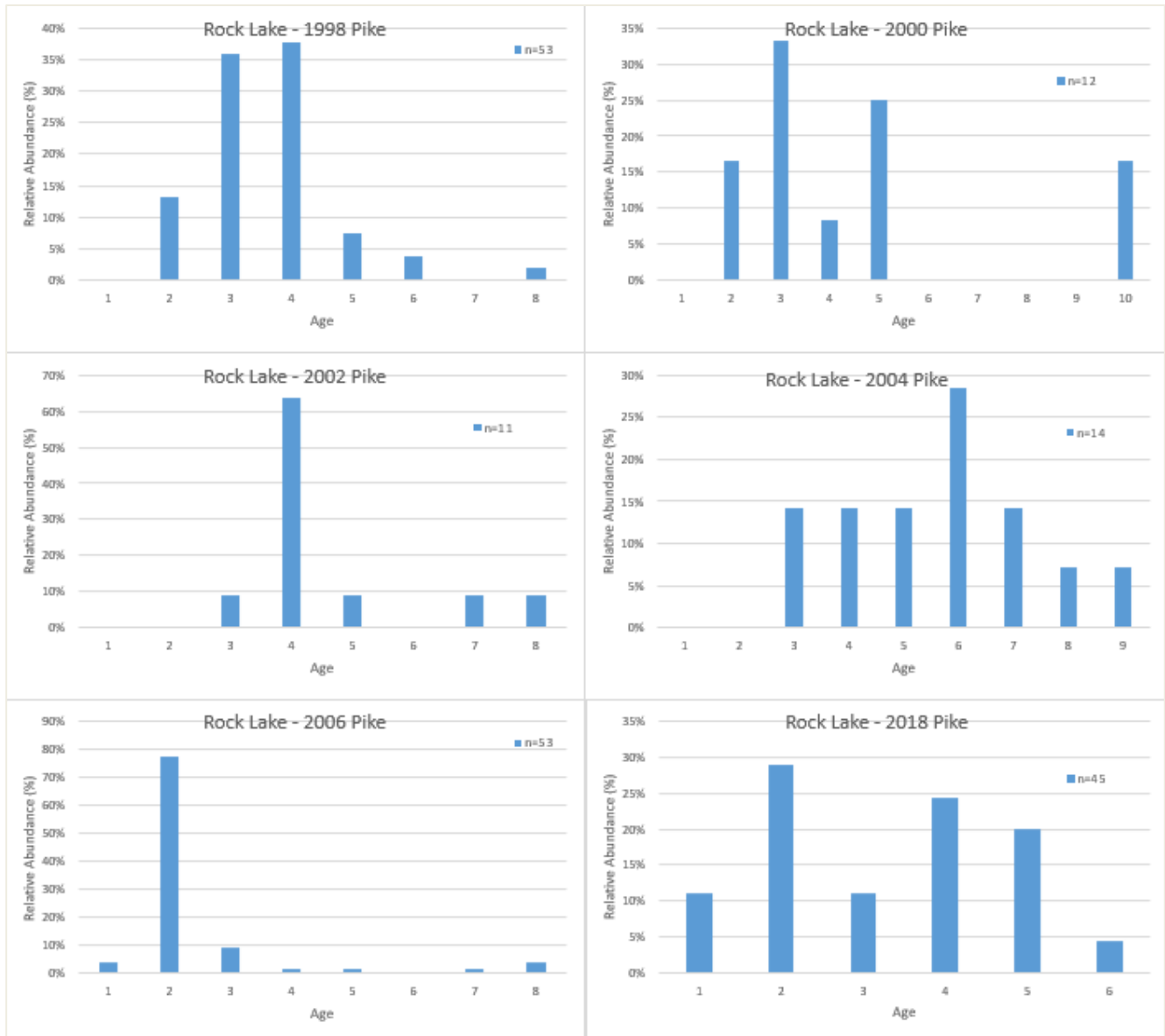


**Figure 5:** Walleye size class frequency from 2023 index netting.

Pike population analysis was also completed during the assessment, which showed relatively few age classes in the lake and may be impacted by the increased abundance of walleye and other top-level predators in the lake (Figure 5).

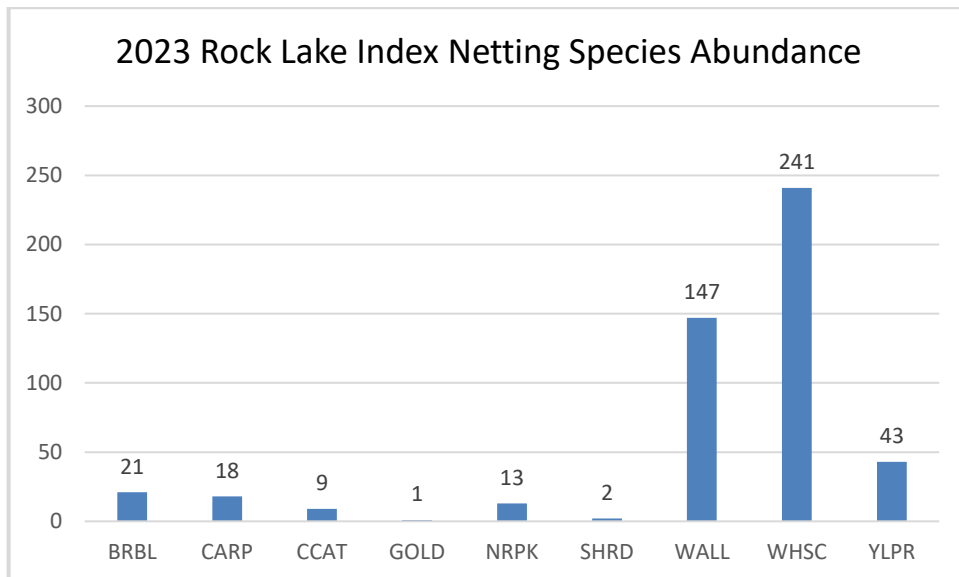


**Figure 6:** Northern pike age frequency from 2023 index netting assessment.

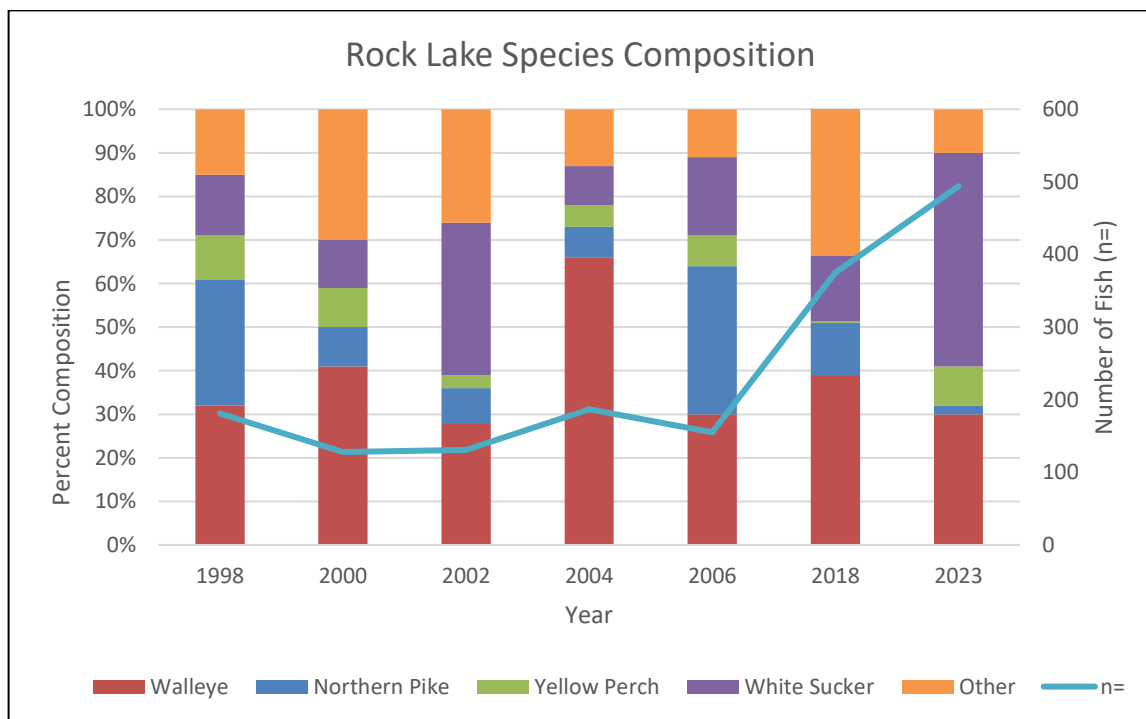


**Figure 7:** Historic northern pike age class frequency from 1998 to 2018 index netting programs.

Figure 8 shows the catch composition from the 2023 index assessment. The most abundant species was white sucker, followed by walleye and yellow perch.

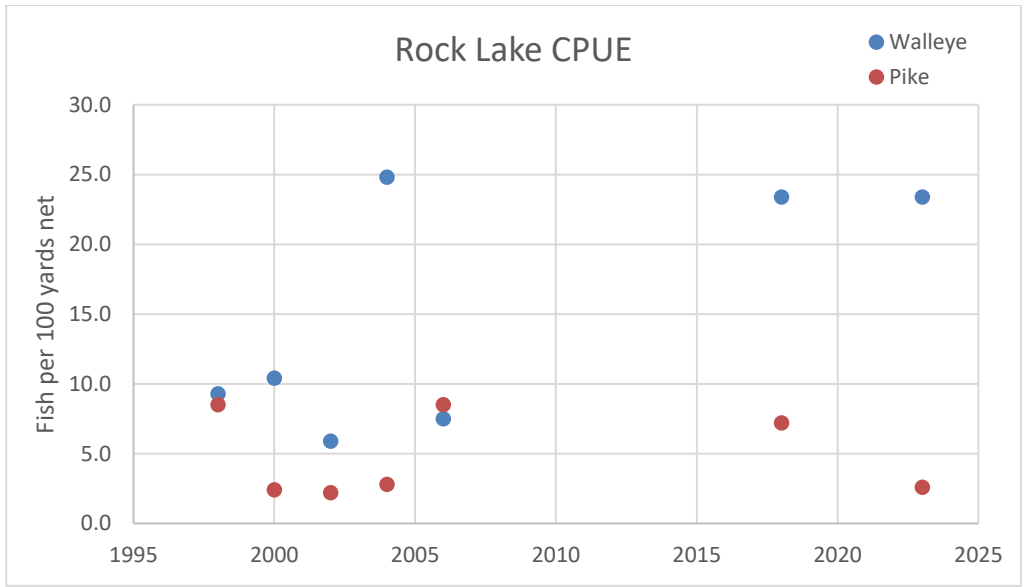


**Figure 8:** Catch composition of species from 2023 Rock Lake index assessment.



**Figure 9:** Catch composition of species from Rock Lake index assessments 1998 to 2023.

In 2023, catch-per-unit-effort (CPUE) for walleye remain constant at 23.4 fish per 100 yards of net compared to the last assessment in 2018, which also 23.4 Walleye per 100 yards (Figure 10).



**Figure 10:** Catch per unit effort of walleye and northern pike from Rock Lake index assessments 1998 to 2023.