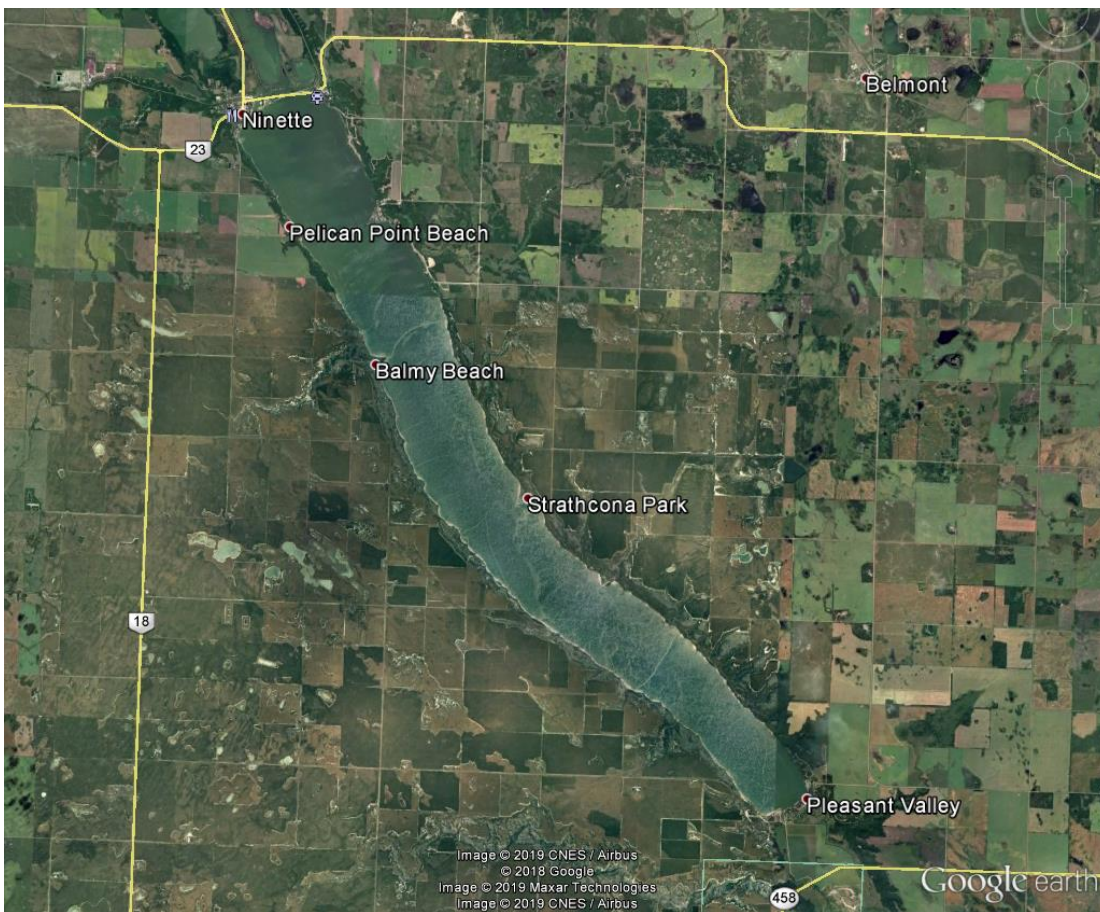


# Fisheries Branch Report

## Pelican Lake 2022 Index Netting Assessment Summary

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Economic Development, Investment, Trade  
and Natural Resources  
2023

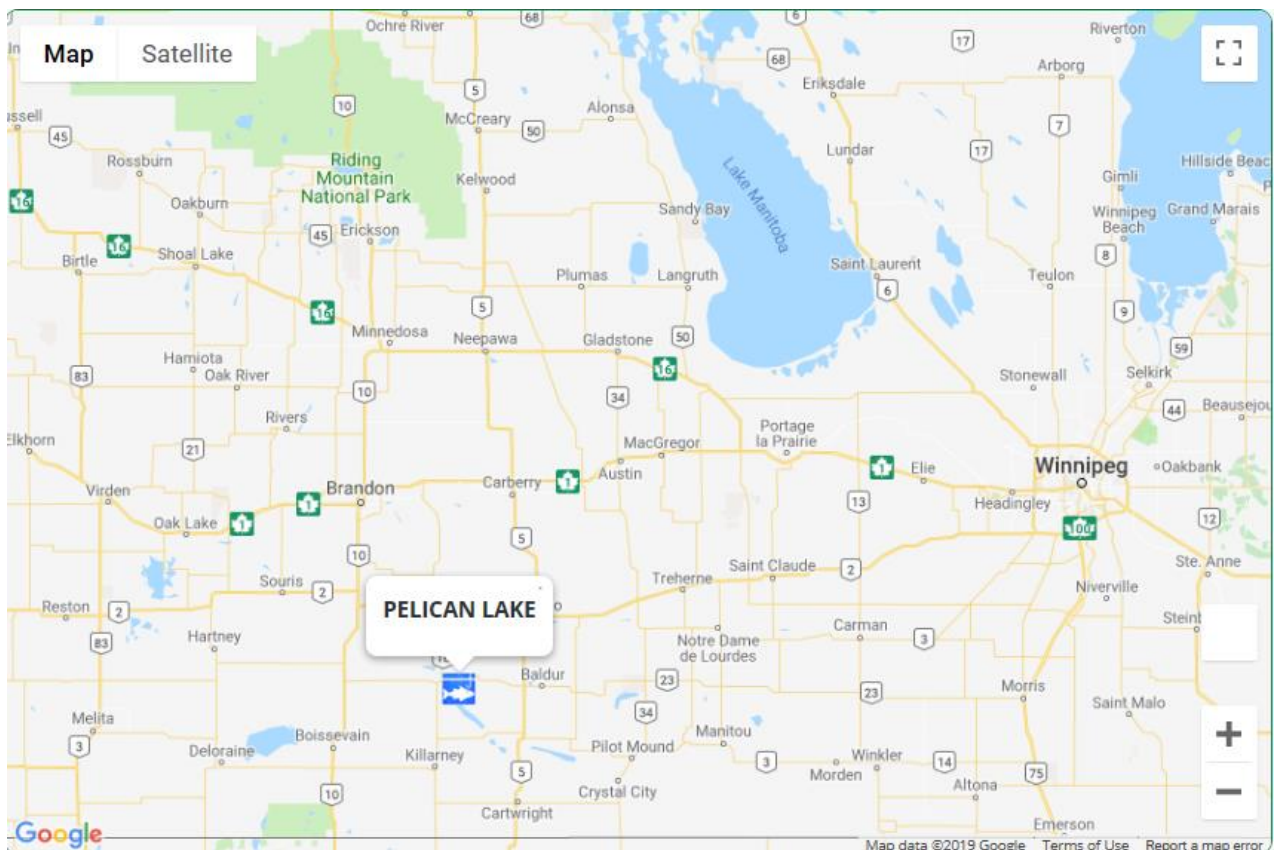
## Introduction

Fisheries staff carried out an assessment in 2022 on Pelican Lake using Manitoba Standard Index Gill Nets 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 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 an effective tool used in fish population assessments. While they are often used for lethal sampling, fisheries biologists are able to extract a wider suite of biological data from mortalities, such as sex, maturity, stomach contents, and accurate age estimates. When used on larger lakes, gill net programs with a low number of sets have a negligible impact on local fish populations. Instead, they are used to subsample the entire population

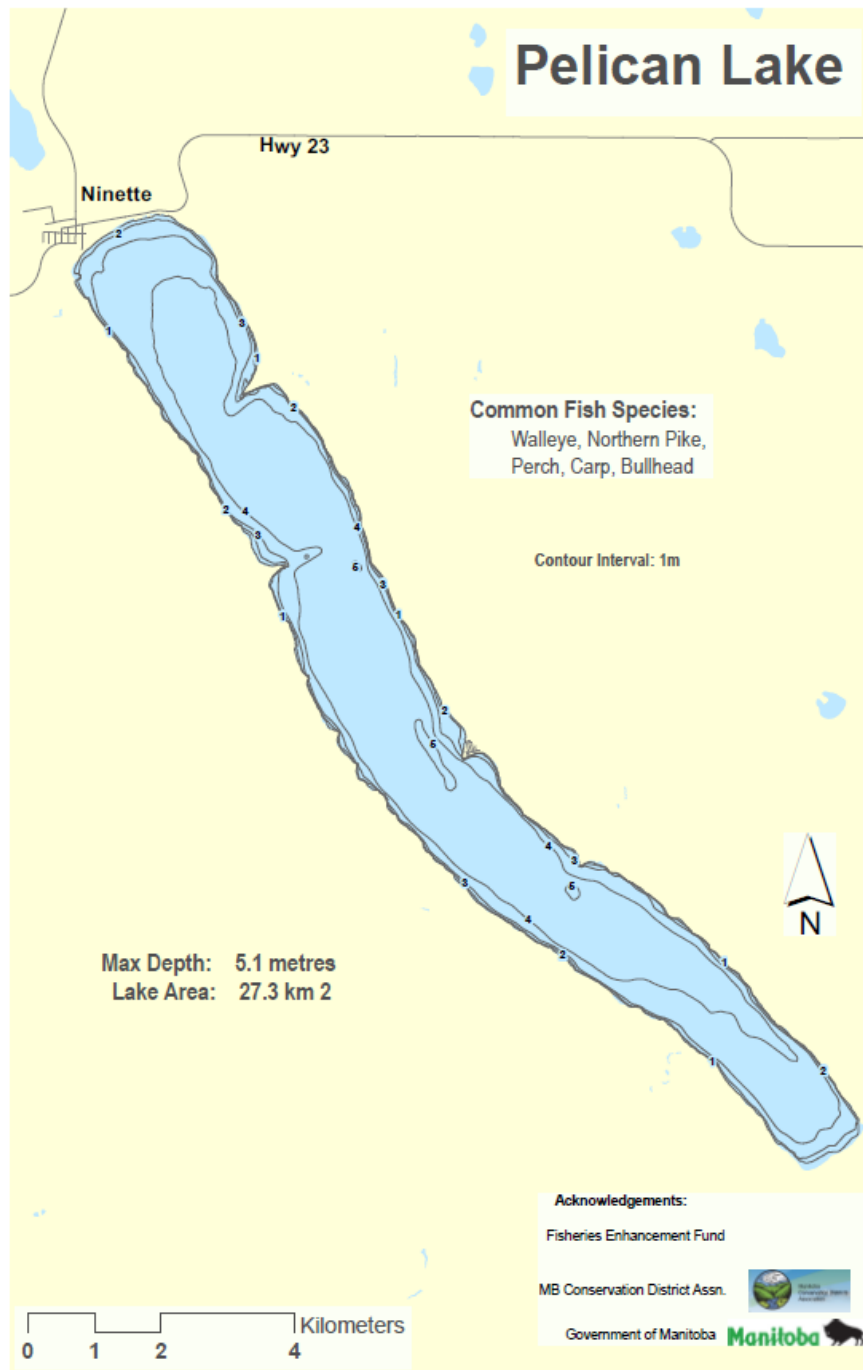
## Overview

Pelican Lake is a large recreationally fished lake in the southwestern portion of Manitoba along PR 253 and PR 342 located approximately at Ninette, MB (see *Figure 1*).



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

Pelican Lake is approximately 17.3 kilometres long orientated from northwest to southeast (Figure 2). The net set location depths ranged from 0.83 meters to 4 meters with an average of 2.1 meters.



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

## Methods

The surveys are conducted each spring or fall when water temperatures are between 15-20°C, a range at which walleye are more equally distributed throughout lakes. Gillnets with mesh sizes of 1.5", 2", 3", 3.75", 4.25", and 5" were set overnight for 2 nights in June at 4 of the 6 historical netting locations. All nets were set perpendicular to shore at a maximum depth of 4 meters.

The number of nets set per lake was based primarily on netting for a 4-day period. 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. In 2022, the target was reached/exceeded after 2 nights of netting and the last 2 sites were not set. 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

Pelican Lake has been stocked since the early 1900's with records starting in 1927, including a variety of species as follows:

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

<b>Year</b>	<b>Species</b>	<b>Number</b>	<b>Size</b>
<b>2023</b>	WALLEYE	1,500,000	Fry
<b>2022</b>	WALLEYE	200,000	Fry
<b>2021</b>	WALLEYE	2,300,000	Fry
<b>2020</b>	WALLEYE	1,200,000 / 53	Fry / Fingerlings
<b>2019</b>	WALLEYE	900,000/ 337	Fry / Fingerlings
<b>2018</b>	WALLEYE	500,000	Fry
<b>2017</b>	WALLEYE	1,700,000	Fry
<b>2016</b>	WALLEYE	1,000,000	Fry
<b>2015</b>	WALLEYE	1,000,000	Fry
<b>2014</b>	WALLEYE	400,000	Fry
<b>2014</b>	WALLEYE	1,000,000	Fry
<b>2013</b>	WALLEYE	400,000	Fry
<b>2012</b>	WALLEYE	1,000,000	Fry
<b>2011</b>	WALLEYE	400,000	Fry
<b>2010</b>	WALLEYE	300,000	Fry
<b>2009</b>	WALLEYE	300,000	Fry
<b>2008</b>	YELLOW PERCH	75	Adult (>30 cm)
<b>2008</b>	WALLEYE	800,000	Fry

2007	WALLEYE	600,000	Fry
2007	WALLEYE	200,000	Fry
2006	WALLEYE	650,000	Fry
2005	WALLEYE	700,000	Fry
2004	WALLEYE	1,000,000	Fry
2003	WALLEYE	600,000	Fry
2002	WALLEYE	400,000	Fry
2001	WALLEYE	350,000	Fry
2000	WALLEYE	400,000	Fry
1999	WALLEYE	300,000	Fry
1998	WALLEYE	450,000	Fry
1997	WALLEYE	450,000	Fry
1996	WALLEYE	500,000	Fry
1995	WALLEYE	500,000	Fry
1995	NORTHERN PIKE	150,000	Fry
1995	NORTHERN PIKE	450,000	Fry
1995	NORTHERN PIKE	500,000	Fry
1994	WALLEYE	500,000	Fry
1993	WALLEYE	500,000	Fry
1992	WALLEYE	500,000	Fry
1991	WALLEYE	1,300,000	Fry
1990	WALLEYE	400,000	Fry
1989	WALLEYE	1,000,000	Fry
1986	WALLEYE	500,000	Fry
1985	YELLOW PERCH	15,000	Adult (>30 cm)
1985	NORTHERN PIKE	980	Adult (>30 cm)
1985	WALLEYE	700,000	Egg
1983	WALLEYE	200,000	Fry
1983	YELLOW PERCH	5,000	0
1983	NORTHERN PIKE	900	Adult (>30 cm)
1982	LAKE WHITEFISH	20,000,000	Fry
1982	NORTHERN PIKE	900	Adult (>30 cm)
1979	NORTHERN PIKE	1,331	Adult (>30 cm)
1979	YELLOW PERCH	10,100	Adult (>30 cm)
1979	WALLEYE	28	Adult (>30 cm)
1979	WALLEYE	500,000	Fry

<b>1977</b>	YELLOW PERCH	6,000	Adult (>30 cm)
<b>1977</b>	NORTHERN PIKE	3,000	Adult (>30 cm)
<b>1976</b>	WALLEYE	200,000	Fry
<b>1975</b>	YELLOW PERCH	5,000	Adult (>30 cm)
<b>1975</b>	SMALLMOUTH BASS	15,000	Fingerling
<b>1974</b>	YELLOW PERCH	5,000	Adult (>30 cm)
<b>1974</b>	WALLEYE	1,500,000	Fry
<b>1973</b>	NORTHERN PIKE	500	Adult (>30 cm)
<b>1973</b>	YELLOW PERCH	3,000	Adult (>30 cm)
<b>1972</b>	WALLEYE	48	Adult (>30 cm)
<b>1972</b>	SMALLMOUTH BASS	5,000	Fingerling
<b>1972</b>	NORTHERN PIKE	1,332	Adult (>30 cm)
<b>1972</b>	YELLOW PERCH	5,000	Adult (>30 cm)
<b>1971</b>	YELLOW PERCH	2,000	0
<b>1971</b>	WALLEYE	500,000	Fry
<b>1971</b>	SMALLMOUTH BASS	3,000	Fingerling
<b>1970</b>	YELLOW PERCH	3,000	Adult (>30 cm)
<b>1970</b>	SMALLMOUTH BASS	33	Adult (>30 cm)
<b>1970</b>	NORTHERN PIKE	370	Adult (>30 cm)
<b>1969</b>	YELLOW PERCH	4,150	Adult (>30 cm)
<b>1969</b>	NORTHERN PIKE	900	Adult (>30 cm)
<b>1968</b>	NORTHERN PIKE	900	Adult (>30 cm)
<b>1967</b>	YELLOW PERCH	3,000	Adult (>30 cm)
<b>1967</b>	NORTHERN PIKE	825	Adult (>30 cm)
<b>1966</b>	WALLEYE	300,000	Egg
<b>1966</b>	NORTHERN PIKE	300	Adult (>30 cm)
<b>1965</b>	NORTHERN PIKE	1,600	Adult (>30 cm)
<b>1964</b>	NORTHERN PIKE	525	Adult (>30 cm)
<b>1963</b>	WALLEYE	66	Adult (>30 cm)
<b>1963</b>	NORTHERN PIKE	960	Adult (>30 cm)
<b>1963</b>	WALLEYE	500,000	Egg
<b>1963</b>	YELLOW PERCH	3,300	Adult (>30 cm)
<b>1963</b>	NORTHERN PIKE	1,190	Fingerling
<b>1962</b>	SAUGER	1,012	Fingerling
<b>1962</b>	YELLOW PERCH	3,600	Adult (>30 cm)
<b>1959</b>	WALLEYE	1,000,000	Egg

<b>1957</b>	WALLEYE	1,500,000	Egg
<b>1956</b>	WALLEYE	1,500,000	Egg
<b>1956</b>	NORTHERN PIKE	200	Adult (>30 cm)
<b>1955</b>	NORTHERN PIKE	450	Adult (>30 cm)
<b>1955</b>	WALLEYE	850,000	Egg
<b>1955</b>	WALLEYE	250	Adult (>30 cm)
<b>1954</b>	NORTHERN PIKE	30	Adult (>30 cm)
<b>1954</b>	WALLEYE	850,000	Egg
<b>1954</b>	WALLEYE	250	Adult (>30 cm)
<b>1953</b>	NORTHERN PIKE	92	Adult (>30 cm)
<b>1953</b>	WALLEYE	260	Adult (>30 cm)
<b>1953</b>	WALLEYE	680,000	Egg
<b>1952</b>	YELLOW PERCH	5,000	Adult (>30 cm)
<b>1952</b>	WALLEYE	510,000	Egg
<b>1950</b>	WALLEYE	1,450,000	Egg
<b>1949</b>	WALLEYE	510,000	Egg
<b>1948</b>	WALLEYE	510,000	Egg
<b>1947</b>	WALLEYE	510,000	Egg
<b>1946</b>	WALLEYE	300,000	Fry
<b>1945</b>	WALLEYE	225,000	Fry
<b>1944</b>	WALLEYE	800,000	Fry
<b>1943</b>	WALLEYE	150,000	Fry
<b>1941</b>	WALLEYE	150,000	Fry
<b>1939</b>	WALLEYE	100,000	Fry
<b>1938</b>	WALLEYE	200,000	Fry
<b>1937</b>	WALLEYE	150,000	Fry
<b>1936</b>	WALLEYE	150,000	Fry
<b>1935</b>	WALLEYE	250,000	Fry
<b>1934</b>	WALLEYE	150,000	Fry
<b>1933</b>	WALLEYE	150,000	Fry
<b>1930</b>	WALLEYE	100,000	Fry
<b>1929</b>	WALLEYE	125,000	Fry
<b>1928</b>	WALLEYE	150,000	Fry
<b>1927</b>	WALLEYE	250,000	Fry

## **Results**

During the 2022 index netting program, 424 walleye and 31 northern pike were captured, which are the main sportfish angled in the lake. The mean walleye catch-per-unit-effort (CPUE) was 70.7 walleye per 100 yards of net. The average age of walleye caught was 3.23 years. There were 8 age-classes caught during the 2022 index assessment. The age class frequency of the walleye population is typical of other recreational lakes in the south that rely on stocking to support and maintain healthy walleye fisheries (see Figure 3).

**Table 2. 2022 Pelican Lake species catch composition by location.**

	<b>Balmy Beach</b>	<b>Cow Point</b>	<b>Turtle Point</b>	<b>Y Point</b>	<b>Grand Total</b>
<b>Northern Pike</b>	2	16	1	12	31
<b>Walleye</b>	103	86	138	97	424
<b>White Sucker</b>	66	31	45	86	228
<b>Yellow Perch</b>	86	39	38	87	250
<b>Brown Bullhead</b>	4	30	16	36	86
<b>Common Carp</b>	0	0	2	0	2
<b>Grand Total</b>	261	202	240	318	1021



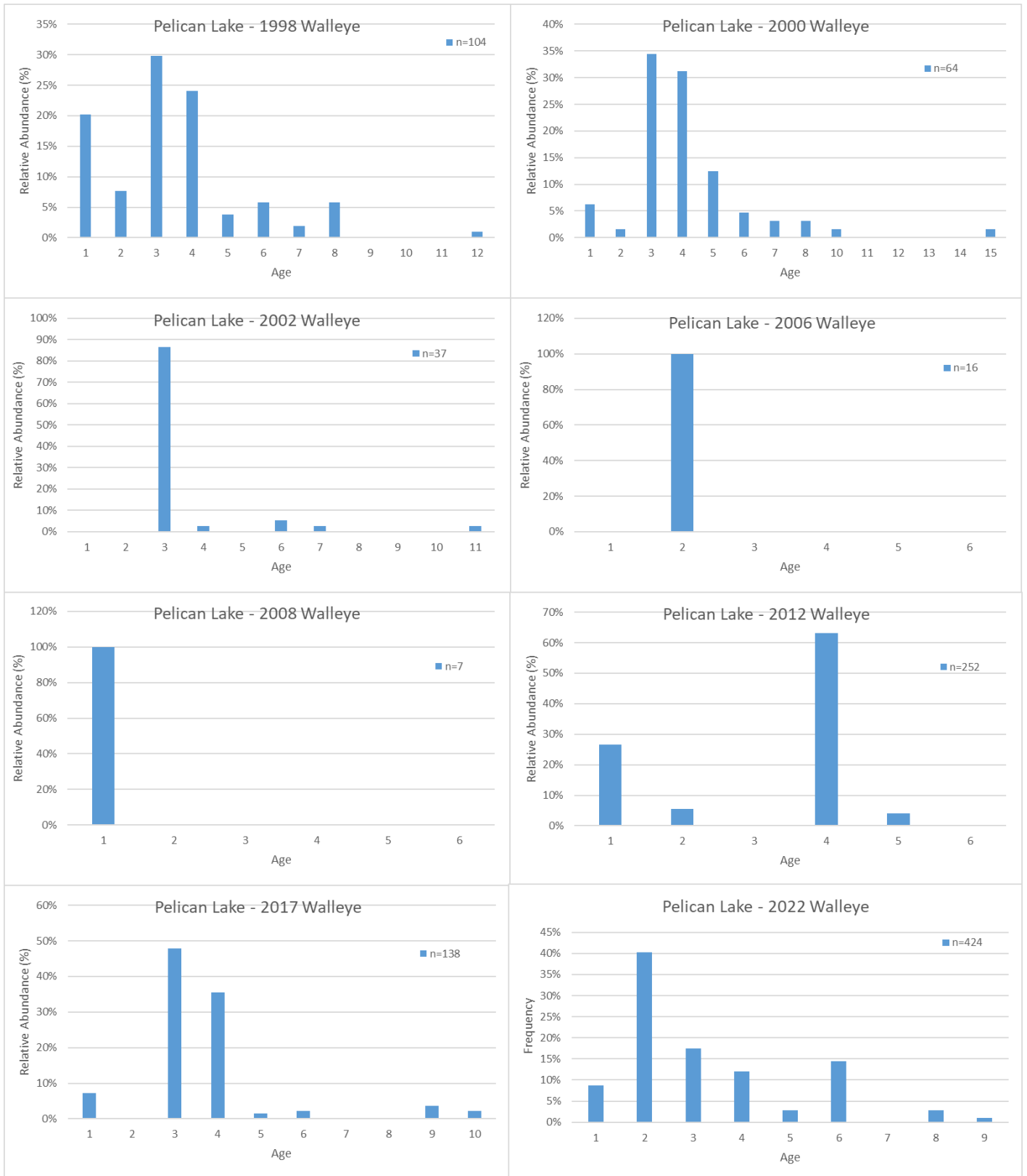
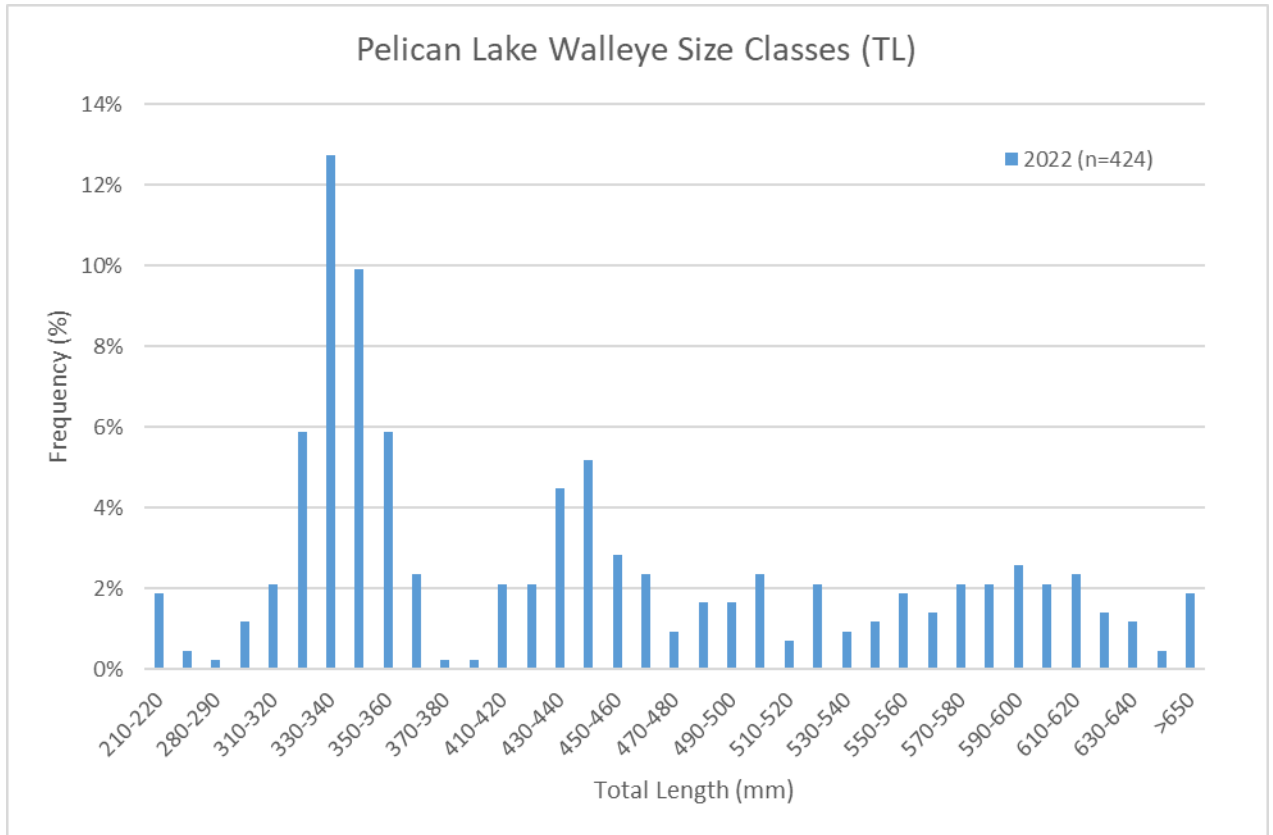


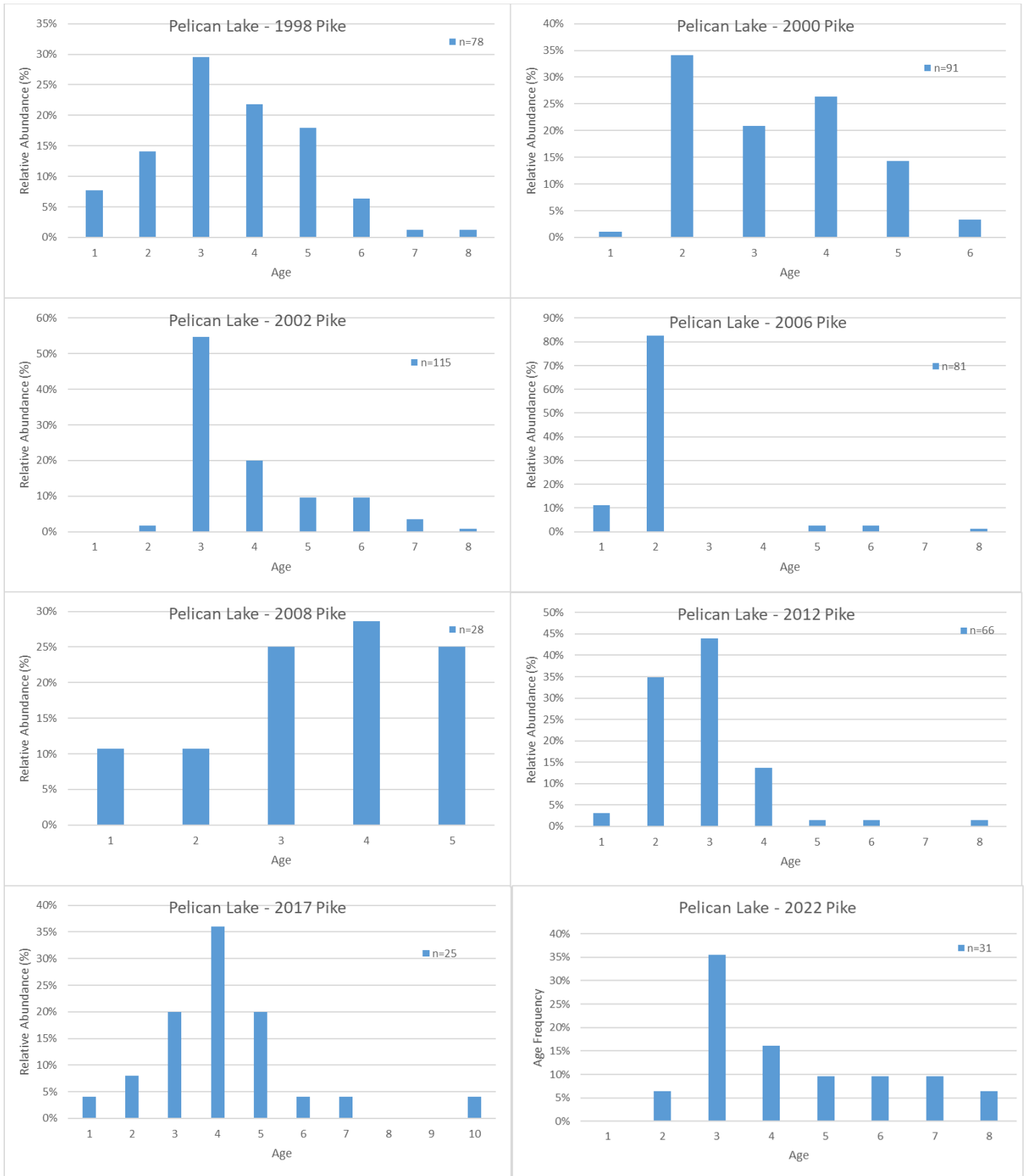
Figure 3. Walleye age class frequency from index netting.

In 2022, average weight of walleye was 885 g (43–4000 g, n=424). 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.



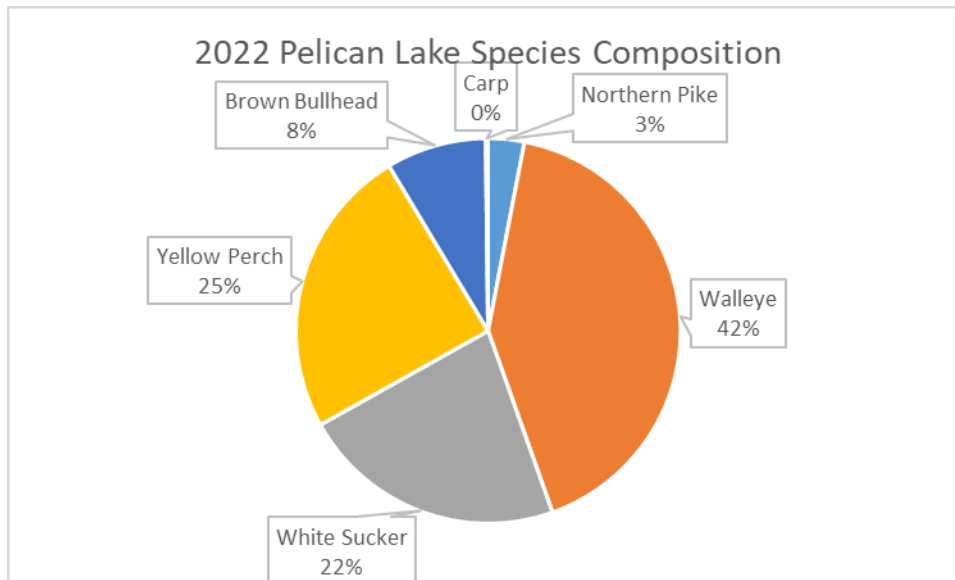
**Figure 4:** Walleye size class frequency from 2022 index netting.

Pike population analysis was also completed during the assessments, which showed relatively few strong age classes in the lake and may be impacted by the increased abundance of walleye and brown bullhead in the lake. Both species compete for food, and brown bullhead are known to puncture pike stomachs with their pectoral spines - often resulting in poor health and reduced body condition (Figure 6).

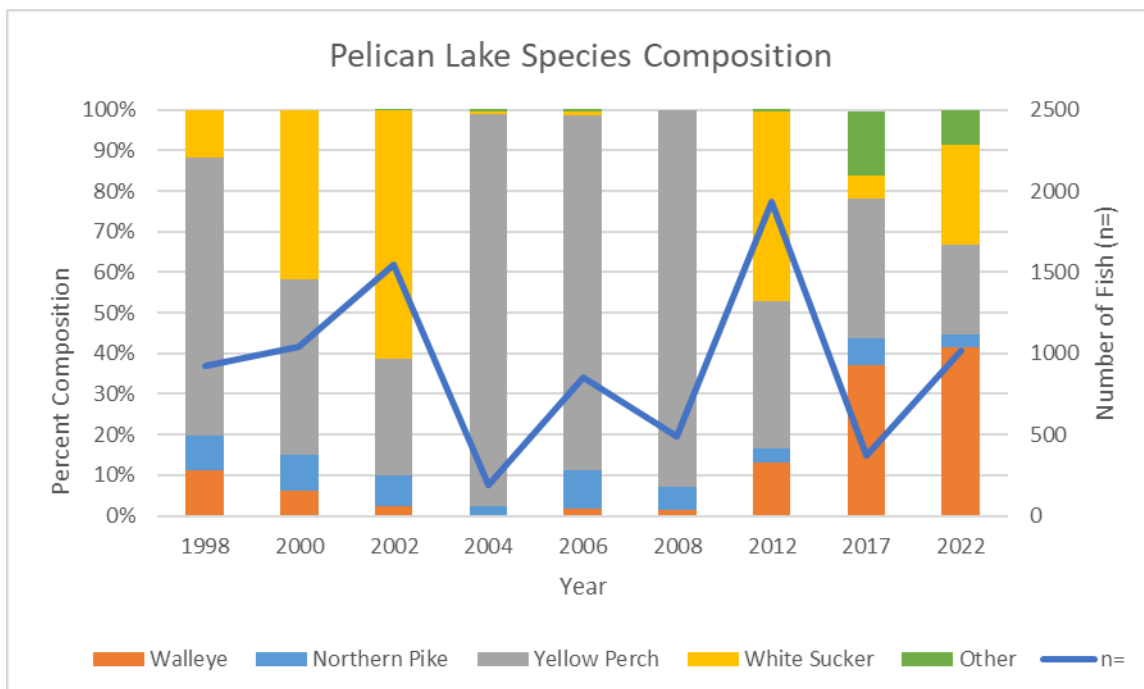


**Figure 6:** Northern pike age frequencies from index netting assessments.

Figure 7 shows the catch composition from the assessment in 2022. Walleye were the dominant species in the catch, followed by yellow perch, and white sucker. This was the first year with a dominant walleye population compared to other assessments, which were mostly dominated by yellow perch or white sucker (Figure 8). Higher walleye abundance and composition is likely due to relatively fewer winterkill events in recent years, which have typically wiped out the majority of the adult walleye population.

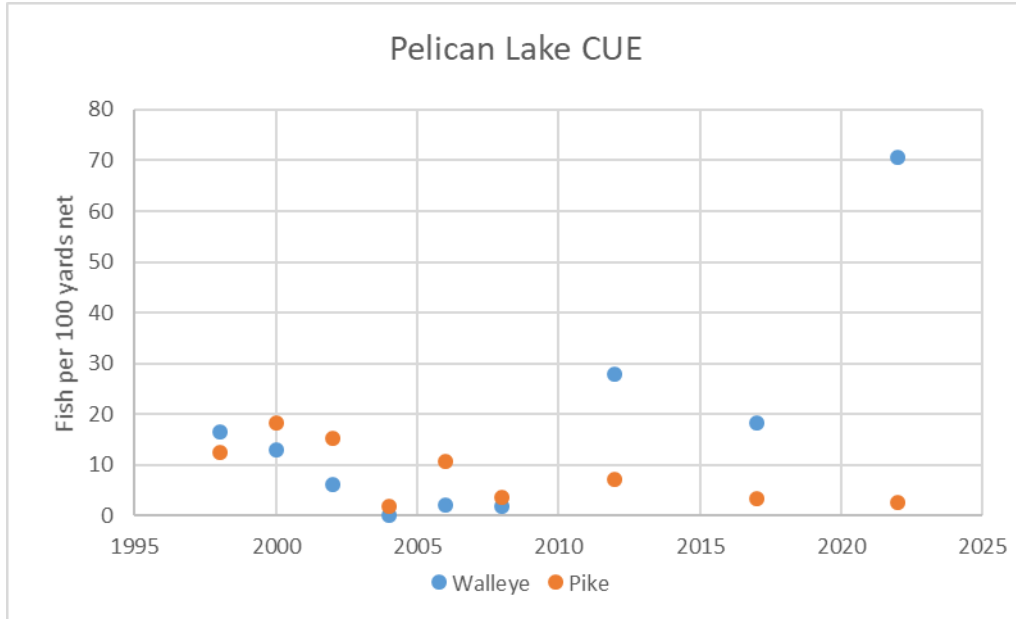


**Figure 7:** Catch composition of species from 2022 Pelican Lake index assessment.



**Figure 8:** Catch composition of species from Pelican Lake index assessments 1998 to 2022.

In 2022, catch-per-unit-effort (CPUE) for walleye was much higher at 70.7 fish per 100 yards of net compared to the last assessment in 2017, which had 18.4 walleye per 100 yards. This is well above prior decades assessments that had a steady decline from 1998 to 2008 (16.6 to 2) (Figure 9).



**Figure 9:** Catch per unit effort of walleye and northern pike from Pelican Lake index assessments 1998 to 2022.