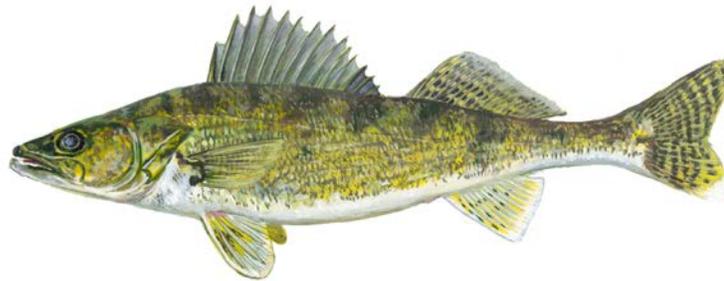


Summary Report: 2013, Mississippi River Pool 8 Fall Walleye and Sauger Young-of-the-Year Assessment

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Objective: To summarize fall electro fishing of young-of-the-year walleye and sauger in Pool 8.

INTRODUCTION

Walleye and sauger are highly sought after recreational fish of the Upper Mississippi River. Both species provide recreational fishing opportunities and a food source. Although generally good, angler success is variable, as walleye and sauger populations naturally fluctuate.

Previous assessments have shown walleye and sauger young-of-year (YOY) recruitment can significantly vary from year to year. Fluctuations appear to be due to biotic and abiotic factors during critical life stages. These limiting factors may determine year class strength.

This report primarily summarizes results from Pool 8 in 2013 and compares them to results from previous years.

METHODS

In the 1980's, electro fishing index stations were established in the tail waters of pools 5, 8 and 10 to annually assess fall YOY abundance. Pools are sampled concurrently. Stations are sampled with a direct current electro fishing boat generating about 250 volts at about 16 amps, pulsed at 80 cycles per second at a 20% duty cycle. The sampling crew consists of one dipnetter and one operator. Each index station is electro fished with a single downstream timed run. The dipnetter attempts to collect all walleye and sauger less than 12 inches in total length. All fish are measured to the nearest millimeter and catch per unit effort (CPUE) is determined for each station. The average CPUE is calculated by dividing the total number of fish by the total time for all six stations combined.

The locations of the six sampling stations in the tailwater of Pool 8 are given in Figure 1. These stations were sampled during the night of November 4, 2013. During 2013, only part of stations 17 and 19 were electro fished due to bridge construction.

The 2013 Pool 8 length criteria used for determining YOY is less than or equal to 9.0 inches for walleye and less than or equal to 8.5 inches for sauger. These lengths were determined through examination of

the 2013 length frequency distributions from this investigation and an earlier fall 2013 non-YOY Pool 8 survey.

RESULTS

Mean water temperature was 7.5 °C (46 °F) which was 1.0 °C below the long-term average. The Lock and Dam 7 tailwater elevation was 631.36 feet which was 1.6 feet below the long-term average. The discharge was 19,800 cubic feet per second which was 18,300 cubic feet per second below the long-term average.

During 2013, YOY CPUE for walleye ranged from 8.5 to 38.9 per hour (average = 28.7) (Table 1), while sauger CPUE ranged from 8.5 to 192.9 per hour (average = 131.1) (Table 1).

Over the past 31 years, both species have shown high variability in recruitment. Average walleye CPUE has varied from 2.9 fish/h to 596.7 fish/h. Similarly, average sauger CPUE has varied from 1.8 fish/h to 400.1 fish/h (Figure 2).

For walleye, the long-term (1983-2013) index average calculated from pooled data was 111.7 per hour. In 2013, average CPUE was 28.7 per hour. All years since 2008 have been below the long-term average. We have never measured six consecutive years of below average recruitment since this survey began in 1983. The most we've measured is four consecutive years from 1993 through 1996.

For sauger, the long-term (1983-2013) index average calculated from pooled data was 87.4 per hour. In 2013, CPUE was 131.1 per hour, above the long-term average. This was the first year since 2008 where there was an above average catch rate for sauger.

In spite of the post 2008 below average abundance estimates, there was no long-term trend seen in either species' CPUE from 1983-2013. Also, we could find no trend from a subset of years that included the last 6 to 14 years.

In addition to observing recent low YOY catch rates in Pool 8, low catch rates were evident in Pool 5. YOY walleye catch rates were below average in 5 of the last 6 years, and YOY sauger catch rates were below average in 7 of the last 8 years. In Pool 10, recent relative catch rates were better than the other two pools. Pool 10 walleye and sauger catch rates have been normal, with only 3 of the last 6 years below the average.

Length frequency distributions for Pool 8 walleye and sauger are given in Figure 3. During 2013, average total length of both YOY walleye and sauger were about the same as their long-term means. Length of 2013 YOY walleye ranged from 5.5 to 8.9 inches and had a mean of 7.3 inches (n = 80); while sauger length ranged from 3.9 to 7.8 inches and had a mean of 6.3 inches (n = 365). Over the past 31 years, walleye average annual lengths have varied from 6.6 to 8.0 inches (mean = 7.6) and 6.0 to 7.3 inches (mean = 6.6) for sauger (Figure 4).

We compared mean total YOY lengths of each species among two subsets of years: 2008 through 2013, and 1983 through 2007. The year 2008 was chosen because that is the first of six years we measured below average abundance. For YOY walleye, there was a statistically significant difference ($p < 0.0001$) between mean lengths. Prior to 2008, walleye mean length was 7.6 inches, while from 2008 through 2013 mean length was 7.2 inches. An identical comparison was done for sauger and these results were

statistically significant as well ($p < 0.0001$). In earlier years the mean length of sauger was 6.6 inches while in later years the mean length was 6.3 inches.

These comparisons suggest that weak year classes of both species may be related to that year's fish growth. Upon initial examination, slow YOY growth rates appear to be related to weak fall abundance estimates. Additional analysis is needed to determine if this is the case.

Table 1. Catch per unit effort of walleye and sauger young-of-year (YOY) sampled at six stations in Pool 8 of the Mississippi River in November, 2013.

Station	Walleye YOY/h	Sauger YOY/h
14	19.2	192.9
15	27.7	124.4
16	28.2	72.3
17	8.5	8.5
18	37.9	159.1
19	38.9	53.0
AVERAGE	28.7	131.1

Figure 1. Location of Six Routine Young-of-the-Year Walleye and Sauger Electro fishing Runs downstream of Lock and Dam 7, in Navigation Pool 8 of the Mississippi River.

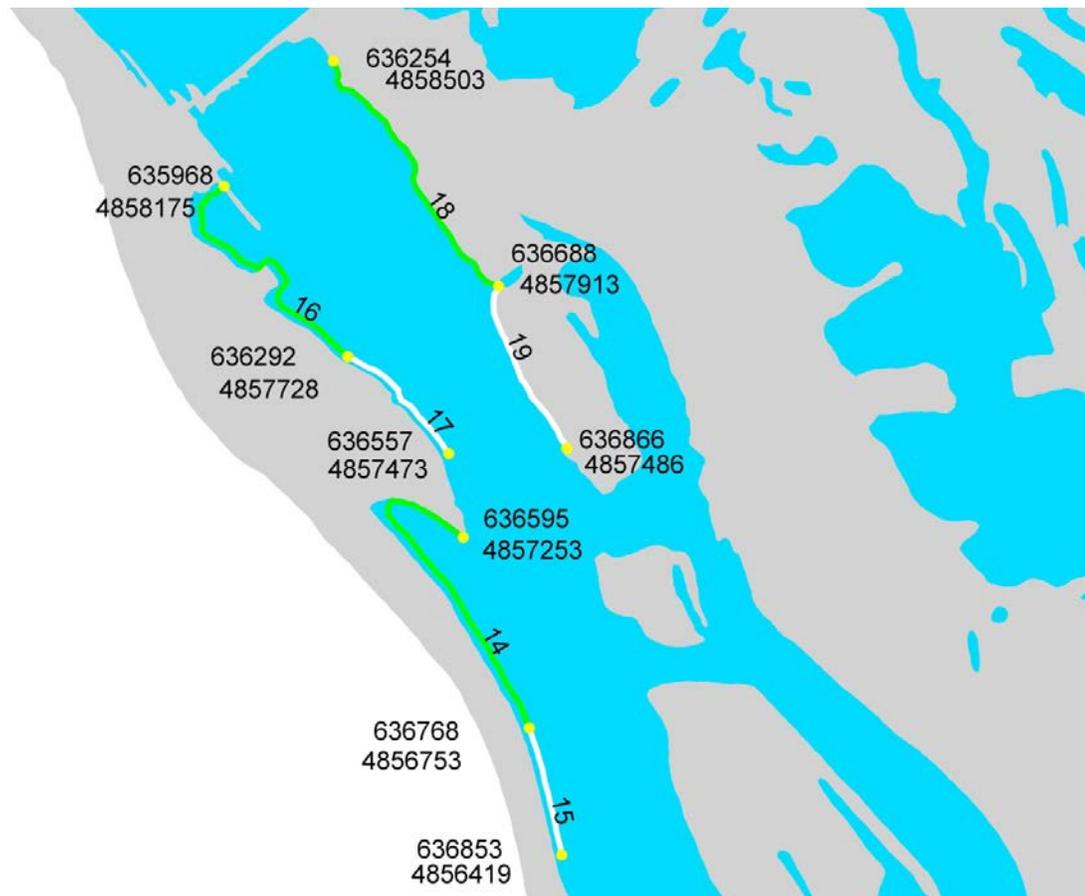


Figure 2. Number per Hour, Fall Pool 8 YOY Walleye and Sauger, 1983-2013.
(Using annual length cutoffs from length distributions)

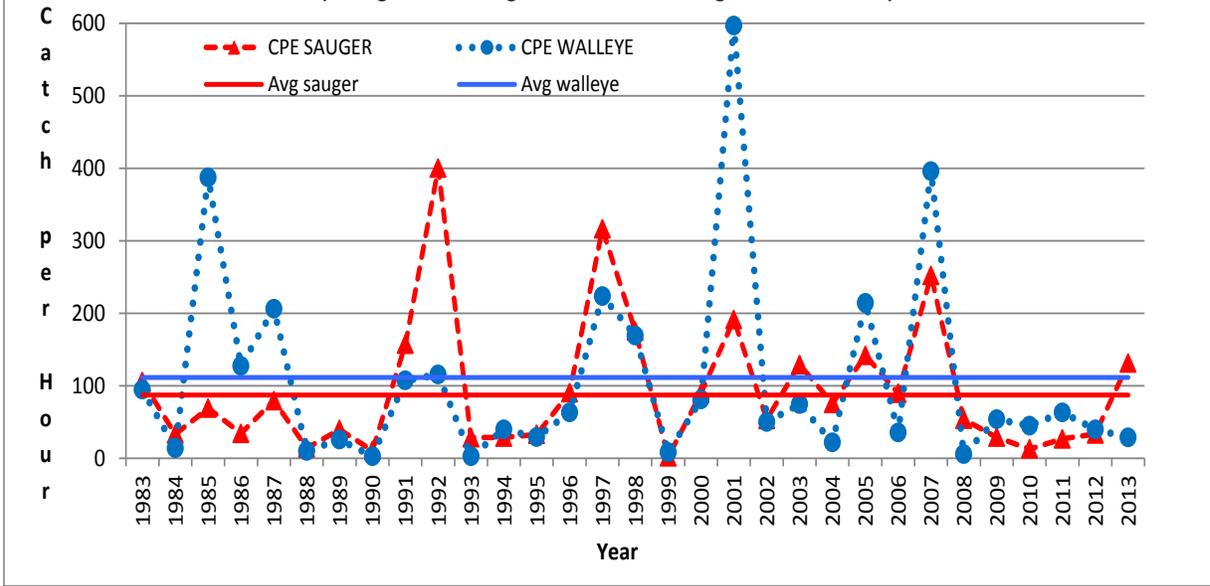


Figure 3. Population Length Frequency Distribution of Young-of-the-Year Walleye and Sauger. Pool 8, Mississippi River, Fall 2013.

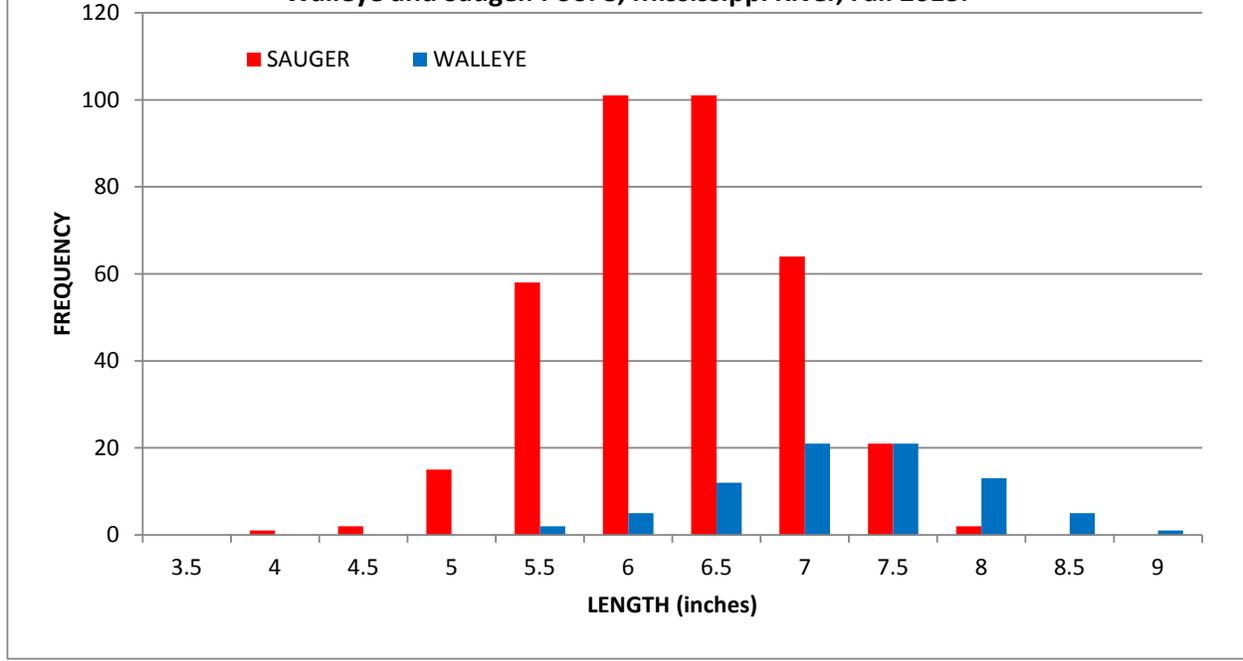


Figure 4. Mean Length in Inches, Fall Pool 8 YOY Walleye and Sauger, 1983-2013. Numbers are sample size. (Using annual length cutoffs from length distributions)

