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NEW YORK STATE OF OPPORTUNITY. Department of Environmental Conservation

Seneca Lake Standard Lake Trout Netting Survey 2020 (Survey #: 820009)

Brad Hammers, Region 8 Fisheries

12/30/22

Seneca Lake, located in West-central New York between Keuka and Cayuga Lake, is the largest of the Finger Lakes, occupying 43,343 acres and is 38 miles long. It is a deep, steep sided lake with an average depth of 291 feet and a maximum depth of 618 feet. Much of the lake has steep drop offs which limit the amount of shallow, vegetated habitat. The littoral zone occupies only about 13% of Seneca Lake. Hypolimnetic waters remain highly oxygenated throughout the summer during lake stratification. Fishing access to Seneca Lake is provided through numerous public and private boat launching facilities around the lake https://www.dec.ny.gov/outdoor/7832.html.

A total of 476 lake trout ranging in size from 5.3 to 31.7 inches (average length was 17.6 inches) were collected from 30 gill nets from July 13 to July 31, 2020 (Figure 1). The largest lake trout caught weighed 10.75 pounds. Proportional stock density[1] was 50.4 and relative stock density-preferred[1] was 9.5. Thirty-nine percent of lake trout collected were <15 inches (legal size). A significant portion of these fish should recruit into the fishery within one to two years. Relative weights of stocked[1] and quality[1] size groups of lake trout were 98 and 97 respectively indicating good condition. Alewife is the primary forage species for lake trout and likely account for the good fish condition. Alewife populations appear to be abundant based on this survey and a later survey (820010) specifically targeting forage species. Catch rates of lake trout were similar to recent sampling events (Figure 2). Based on fin clips analyses, only 12% of lake trout were of wild

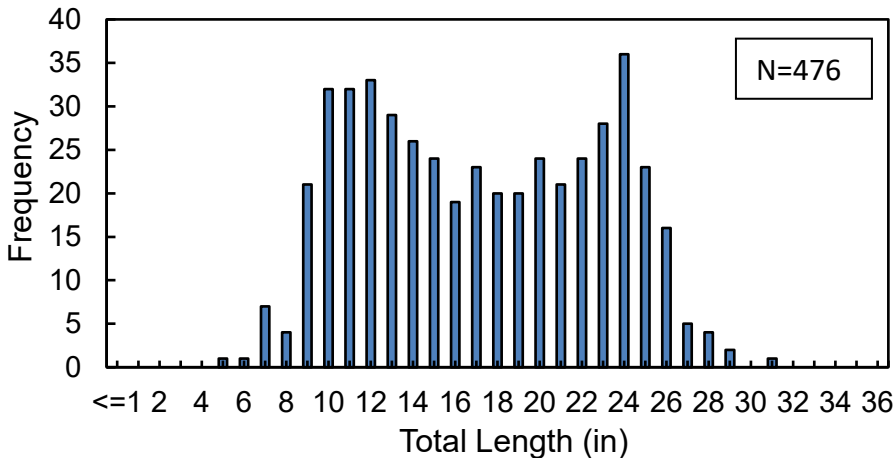

Figure 1. Length frequency distribution of lake trout from Seneca Lake.

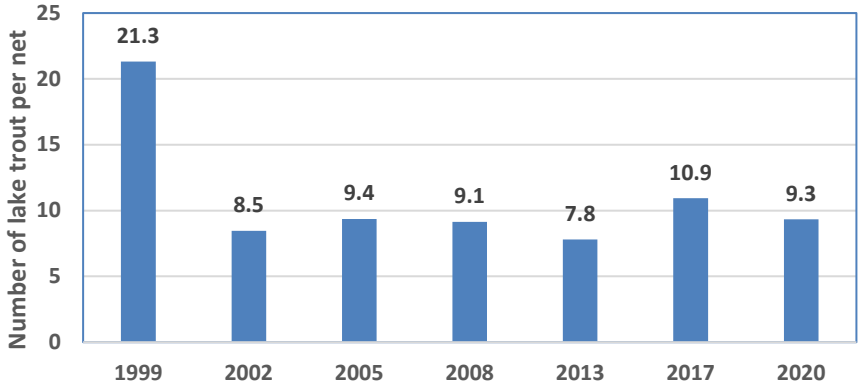

Figure 2. Catch of lake trout per net night using Finger Lakes standard gang gillnets from Seneca Lake. Catch rates for 2013, 2017, and 2020 are corrected for use of monofilament nets.

SPORT FISH RESTORATION

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origin. This is down significantly from the mid-2000's when wild lake trout were around 60% of the sampled population. Reasons for the shift to decreased natural recruitment are unclear. However, it may be related to the abundant alewife population and potential impacts related to Early Mortality Syndrome resulting from an increased alewife diet and resultant thiamin deficiencies. Age and growth analyses has not been completed to date but will provide information on age distribution and growth rates compared to previous surveys and other similar waterbodies.

Sea lamprey wounding rates were 0.43 and 1.18 Type I-III (recent wounds) and Type I-IV (recent wounds plus scars from previous wounds) respectively for 87 lake trout from 23.6 to 27.5 inches, the index size range for Seneca Lake. Although Type I-IV are below the desired threshold (1.5), the Type I-III wounds are higher than a proposed index (0.25) indicating the current sea lamprey population is at undesirable levels. Sea lamprey treatments were successfully performed in 2021 and should reduce future lake populations benefiting the trout and salmon fishery in the lake.

According to results from the Angler Diary Program for Seneca Lake, recent angler success has been poor. Several factors have likely resulted in the recent poor results anglers are experiencing in Seneca Lake. These include increased lamprey predation, changes in population dynamics of lake trout populations both from natural conditions and associated stocking manipulations, continuous changes to the food web due to zebra and quagga mussels and other invasives, and increased forage abundance, primarily alewives, We have been addressing those factors that we have the greatest control on by increasing lake trout stocking to pre-2012 levels and focusing on lamprey control efforts to reduce salmonine mortalities.

[1]For definition of stock, quality, and preferred size groups please see fisheries dictionary.