

NJDEP Division of Fish and Wildlife Bureau of Freshwater Fisheries

Lake Trout Population Assessment

Lake Trout (*Salvelinus namaycush*) fisheries exist in two waterbodies within New Jersey, Round Valley Reservoir and Merrill Creek Reservoir. Although stocked for years, the Lake Trout populations in these two reservoirs are now entirely supported by natural reproduction and are no longer stocked by NJDFW's Hackettstown State Fish Hatchery. Surplus Lake Trout were periodically stocked into Monksville Reservoir from 2004 - 2012, however a significant fishery never developed. As a result, Lake Trout are no longer stocked in New Jersey.

Round Valley Reservoir - The Lake Trout population in Round Valley Reservoir is closely monitored by NJDFW to evaluate the status of this trophy trout fishery. Lake Trout reared at the Hackettstown State Fish Hatchery were stocked in this deep reservoir (maximum depth 160 feet) from 1977 until 1995. In 1985, evidence that natural reproduction was occurring within the reservoir was documented. By 1995 it was determined that the population was capable of maintaining itself by natural reproduction, thus stocking was discontinued. Gill net surveys are conducted every fall, when mature Lake Trout seek out suitable spawning habitat along the boulders lining the reservoir's dams. Eight experimental gill nets, each net with varying mesh size openings, are used to capture a range of Lake Trout from juveniles to sub-adults. Eight additional large-mesh gill nets (6" stretch mesh) are set near the reservoir's north and south dams to capture mature Lake Trout as they begin congregating to spawn over the rocky substrate. Length and weight data are collected to assess physical condition of the fish using relative weight analysis. In addition, sex, fin clips, and sexual development information are also recorded.

In 2015 the large-mesh gill nets set overnight and retrieved on November 12 and 17, resulted in the capture of 98 Lake Trout ranging from sub-adults to adults. Combined with 58 juvenile to sub-adults captured with experimental gill nets on October 27 and 28, the 156 Lake Trout is average for surveys conducted since 2006. The number of Lake Trout encountered during our monitoring program over 25 inches has steadily declined since 1996. During the mid-1990's more than 40 individual fish over 25 inches were documented. That number has decreased to single digits in recent years (see figure below). Unfortunately, the trend of

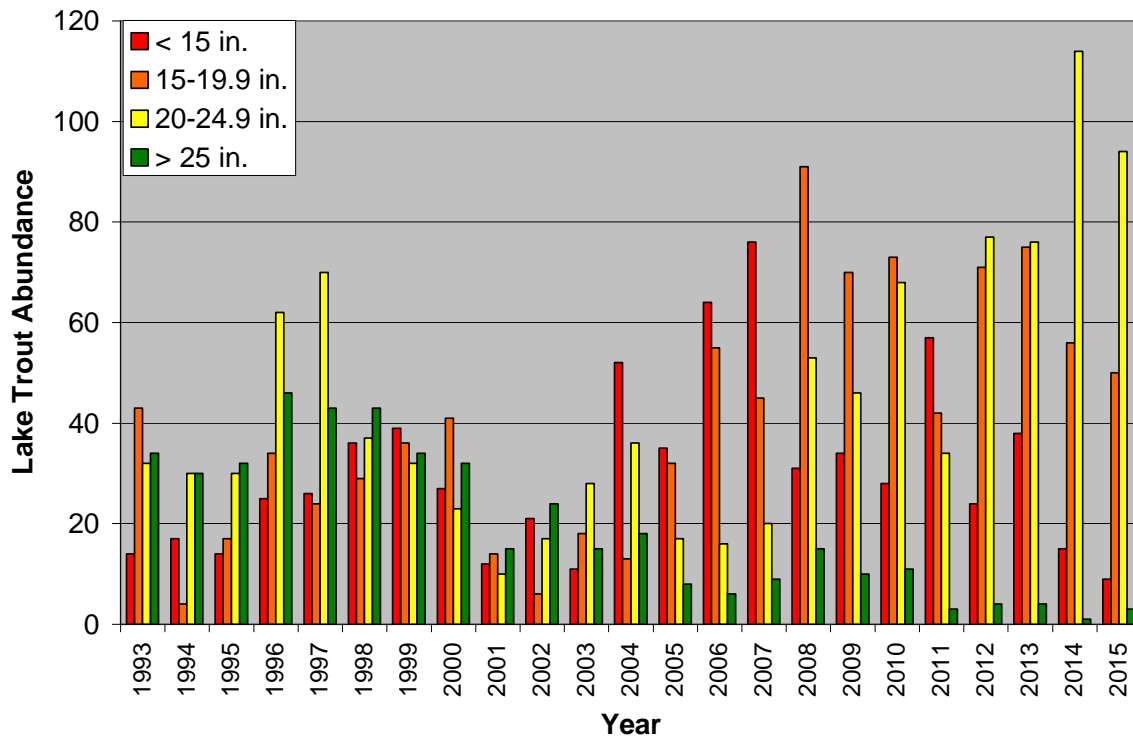


The largest Lake Trout collected during the 2015 RVR gill net surveys was this 22.6 lb. female

decreasing numbers of large Lake Trout is resulting in a less-desirable trophy Lake Trout fishery. 2014 was the first year no Lake Trout over 30 inches or over ten pounds were caught, however two large Lake Trout were caught in 2015. The largest individual was a female measuring 39.3 inches and weighing 22.6 lbs. (see photo above). Despite few individuals reaching trophy proportions, the Lake Trout population is doing well, as the total number documented while monitoring has steadily increased since 2001.

In 2008 and then again in 2012, the regulations were modified to increase harvest, aiming to reduce competition and facilitate better condition and faster growth. This management strategy seems to have worked, as the number of Lake Trout from 15 to 20 inches has declined, while those from 20 to 25 inches have increased (see figure below). NJDFW plans to continue to encourage the harvest of Lake Trout from 15 to 24 inches with the intention of achieving a more desirable trophy fishery.

Number of Lake Trout captured (by size) during annual gill net surveys at Round Valley Reservoir since 1993.



Round Valley Reservoir Salmonid Diet Study – order to better understand the composition of trout diets in Round Valley Reservoir, volunteers from Round Valley Trout Association collected trout stomachs from fish that were caught during their monthly tournaments. The primary purpose was to determine if the contribution of baitfish (primarily Alewives and Golden Shiners) in the diet of



Typical RVR Lake Trout stomach filled with scuds (*Gammarus* sp.)

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Rainbow, Brown, and Lake Trout in Round Valley Reservoir. Stomachs were preserved in ethanol and later analyzed by NJDFW staff. Ninety-eight stomachs were collected on 12 different days from April 16 to September 12. Of the 90 Lake Trout, only 4 had fish in their stomachs (2 unknown Clupeids and 2 unknown Shiners, however 1 had a hook in its back). Results were similar to previous efforts during 2006, 2007, 2009, and 2010 with 8 of 158 (5%) of Lake Trout having fish in their stomachs, with scuds (*Gammarus* sp.) (see photo above) composing the most significant portion of the diet of Lake Trout. One of six Rainbow Trout had decomposed fish in its stomach (thought to be an Alewife). One of two Brown Trout had 12 unknown shiners in its stomach. The data will be used, in conjunction with other measures, to determine the status of the baitfish population at the reservoir.

Merrill Creek Reservoir- Merrill Creek Reservoir is a 650-acre privately-owned reservoir located in Harmony Twp., Warren County that is open to public fishing. Following construction and filling in 1988, a variety of fish species have been stocked in this deep-water reservoir (200 ft deep) by NJDFW to establish and maintain desirable sport fisheries for Smallmouth Bass as well as Rainbow, Brown, and Lake Trout. The reservoir's fishery is managed by the Merrill Creek Owners Group in cooperation with Fish and Wildlife. This team meets annually to review and discuss fisheries data collected by the owner and their consultant, and to make management decisions. In recent years, Lake Trout have been the primary management focus and the owner's consultant annually monitors the Lake Trout population in the fall using gill nets. When the gill net survey data indicated that Lake Trout were naturally reproducing in the reservoir, stocking of this species was discontinued in 2013.

In 2015, to supplement fisheries data collected by the owners' fisheries consultant, the Bureau of Freshwater Fisheries deployed four experimental gill nets overnight (November 5 – 6) to target small Lake Trout. A total of 30 fish were captured, representing 6 species (Lake Trout, Smallmouth Bass, Rock Bass, Yellow Perch, Brown Bullhead, and Alewife). Only 20 Lake Trout were captured, compared to 27 in 2014. The Lake Trout captured in the 2015 survey ranged in size from 227–760 mm (8.9–29.9 in). The largest fish (pictured above) weighed 4.8 kg (10.7 lb.). Eight of the Lake Trout were fin clipped, signifying that they were stocked (hatchery origin). The remaining 12 lakera captured were not fin-clipped and are considered to be the product of natural reproduction.



10.7 lb. Lake Trout from Merrill Creek Reservoir held by Charlie Dix of Normandeau Associates