Bureau of Fisheries Technical Brief #322001

NEW YORK STATE | Department of Environmental Conservation

Muscoot Reservoir Trap Net Survey (Survey #: 322001)

Garrett Vigrass, Region 3 Fisheries

4/6/2022

Muscoot Reservoir is a 1,263-acre reservoir located in the towns of Lewisboro, Somers, and Bedford, Westchester County, NY. This reservoir is one of twelve New York City Department of Environmental Protection's (NYC DEP) reservoirs in the Croton system responsible for diverting water to New York City's water distribution center. Muscoot Reservoir is nearly eight miles in length with a maximum depth of 32 feet, the damming of the Croton River created this narrow riverine like reservoir. Public access is provided by the NYC DEP, a free watershed access permit is required to access all DEP lands. Row boats must be approved and registered by the NYC DEP prior to use, they also must be stored on the assigned reservoir property. Contact the local DEP office assigned to the desired reservoir pertaining to information on the registration/storage process. Muscoot is annually stocked with 850 yearling brown trout and 1,000 yearling rainbow trout every April. Muscoot Reservoir falls under the statewide regulation for trout, 5 fish daily limit, with no more than 2 over 12"; ice fishing is permitted. While the reservoir is primarily known for its warm water fishery, mostly black bass, black crappie and panfish, it also supports a sufficient trout fishery.

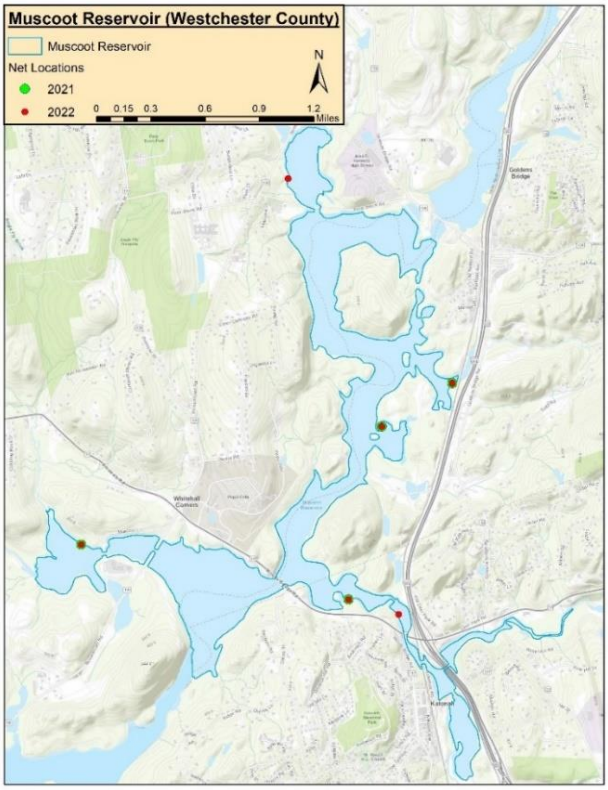

Figure 1. Map of Muscoot Reservoir's 2021 & 2022 trap net locations, four sites were replicated for both years. All 2022 netting sites will be replicated moving forward.

In 2021 the NYS Department of Environmental Conservation (NYS DEC) released the Big Panfish Initiative Study Plan (BPI). This plan implemented regulation changes which would take effect 4/1/2022 on panfish and black crappie. Muscoot Reservoir was selected as Region 3's waterbody to evaluate the statewide regulation change which; increased the minimum size limit of black crappie from 9" to 10" and reducing the harvesting limit to 25; previously 50. Since 2021 trap netting surveys have been conducted in April-May to monitor any changes in size structure, age structure or growth conditions.

A series of four Oneida trap nets and 4 fyke nets were set in various depths along the shoreline in 2021 to determine the efficiency of both net styles, it was determined that Oneida style trap nets would be used on future surveys (Loukmas 2021). Two 4x4' car and one 6x6' car Oneida style trap nets were set and in various locations across the reservoir sharing similar depth and habitat characteristics (Forney et al.1994) from 4/26/22 through 4/28/22 (Figure 1.) These were deployed in same sites as the 2021 survey under the New York Sunfish and Crappie Trap Netting Protocol to keep data consistent. Fish that were collected had scales/otoliths taken to determine age structure, weighed, and measured to the nearest millimeter.

A total of 369 black crappie were captured during this survey with a catch per net/night of 61.5. These fish ranged from 4.3 – 11.0 inches with a 76% majority being in the seven-to-eight-inch category (Figure 2). Proportional Stock Density (PSD), Relative Stock Density for 10-inch and above fish (RSD_{10}) and

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RSD_{12} was 43, 1, and 0 respectfully. Similarly, to the 2021 survey, the PSD of black crappie suggests a stable population of fish in the 'stock' and 'quality' sized fish (Brooking et al. 2018). However, the population of fish in the 'preferred', 'memorable' and 'trophy' categories is lacking as it was in prior surveys. This suggests there is a strong population of fish not reaching the ''preferred' 10-inch size structure which is the statewide minimum length limit regulation. Relative weight for all sized crappie and those captured in the 'quality' to 'preferred' sized fish was 92 and 91, respectfully. Furthermore, these fish ranged from two to six years of age. Age at length falls well below the statewide average for both 2021 and 2022 (Figure 3).

A total of 341 sunfish were captured with a catch per net/night of 56.8. The sunfish breakdown over the entirety of the survey was 338 bluegill and 3 pumpkinseeds. Bluegill was the most abundant sunfish at 99% in 2022; this was also observed in the 2021 survey with 537 bluegill and 34 pumpkinseeds, 94% being bluegill. Bluegill ranged from 4.0 – 8.5 inches with a 73% majority being in the six-to-seven-inch category (Figure 2), while pumpkinseed ranged from 5.8 – 7.4 inches. Bluegill PSD, RSD_8, and RSD_{10} were 78, 6, and 0. The RSD_8 metric was slightly higher than the 2021 value which was four. Relative weight for all sized bluegill and those captured in the 'quality' (six inch) to 'preferred' (eight inch) sized fish was 88 and 84, respectfully. Captured bluegill ranged from two to eight years of age, age at length either met or were slightly below the statewide average both survey years (Figure 3).

The data of both black crappie and bluegill suggests there is a large population of fish below 'preferred' size and overall relative weight of the fish was near optimal, indicating a healthy system. This was observed in the 2021 survey as well. Future surveys will be continued until 2025 to determine if the NYS BPI management plan regulation changes has any effect on black crappie and sunfish within Muscoot Reservoir.

Figure 2: Length Frequency of Selected Panfish Species by Year

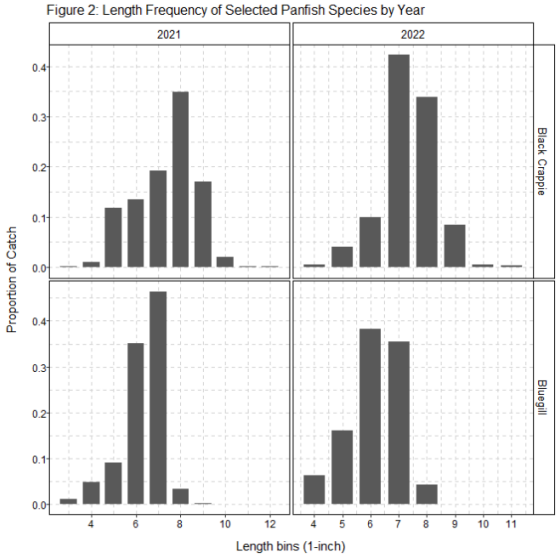
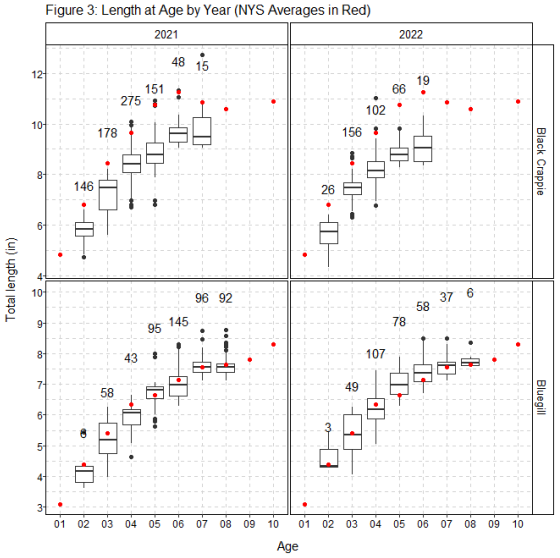


Figure 3: Length at Age by Year (NYS Averages in Red)



Literature Cited:

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