

Horseshoe Lake Walleye Management Evaluation (Survey#:617709)

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Horseshoe Lake, located in St. Lawrence County (Town of Piercefield), is approximately 425 acres with a shoreline dominated by mixed forest. This water is a classic Adirondack lake with low productivity as evidenced by predominantly sandy substrate and scant submerged aquatic vegetation. The average depth of this water body is approximately 9 feet with a maximum of 16 feet.

This water was traditionally managed as coldwater fishery with brook trout the primary focus. Yellow perch were first found in 1975 which led to a subsequent and unsuccessful reclamation. Horseshoe Lake is now managed as a warm/coolwater fishery. Both walleye and tiger muskellunge are stocked annually at a rate of 8500 (1.5in) and 2100 (10in) fish, respectively. A special angling regulation for walleye requires fish to be a minimum of 18in for harvest.

Horseshoe Lake was sampled the night of 9/25/17 by boat electrofishing as part of a Percid Sampling Plan study (Forney et al. 1994). Three hours of on-time (Gamefish 2 hours, All-Fish 1 hour) were dedicated to this collection, which covered approximately 66% of the available shoreline. Temporary access for the shocker boat had to be constructed and subsequently removed after use as the Horseshoe Lake Wild Forest Unit Management Plan (2002) eliminated the launch for trailered boats. Freshwater mussels, most likely Eastern Pearlshell (*Margaritifera margaritifera*), were observed while shocking.

A total of 280 fish, comprised of 7 species, were collected in the survey. Yellow perch and smallmouth bass dominated the collection at 44.6% and 22.9%, respectively (Table 1). The catch was noticeably predator heavy with yellow perch, pumpkinseed and potentially white sucker as classic forage species. A companion gill net survey (617503) did demonstrate the presence of golden shiner, however, densities are likely very low given that none were captured with boat electrofishing.

Table 1. Species and numbers of fish collected the night of 9/25/17 on Horseshoe Lake by boat electrofishing. Percentage indicates the proportion of the catch.

| Common Name | Total Catch | | Gamefish | | All Fish | |
|-----------------|-------------|------|----------|-----|----------|------|
| | Number | % | Number | % | Number | % |
| Yellow Perch | 125 | 44.6 | 1 | 0.4 | 124 | 44.3 |
| Smallmouth Bass | 64 | 22.9 | 26 | 9.3 | 38 | 13.6 |
| Walleye | 45 | 16.1 | 26 | 9.3 | 19 | 6.8 |
| Largemouth Bass | 28 | 10.0 | 15 | 5.4 | 13 | 4.6 |
| Pumpkinseed | 16 | 5.7 | | | 16 | 5.7 |
| Tiger Musky | 1 | 0.4 | 1 | 0.4 | | |
| White sucker | 1 | 0.4 | | | 1 | 0.4 |



A length frequency distribution shows that available forage is likely composed primarily of young of year (YOY) yellow perch (Figure 1). Only 3 yellow perch were collected ranging from 4-7 inches, however sixteen fish >9 inches were in the sample. Surveys prior to 2005 showed a more balanced size structure. Tiger musky do not appear in Figure 1 as only a single fish (20in) was collected. Predators appear to be utilizing yellow perch as their primary prey, creating a noticeable gap between YOY and mature fish.

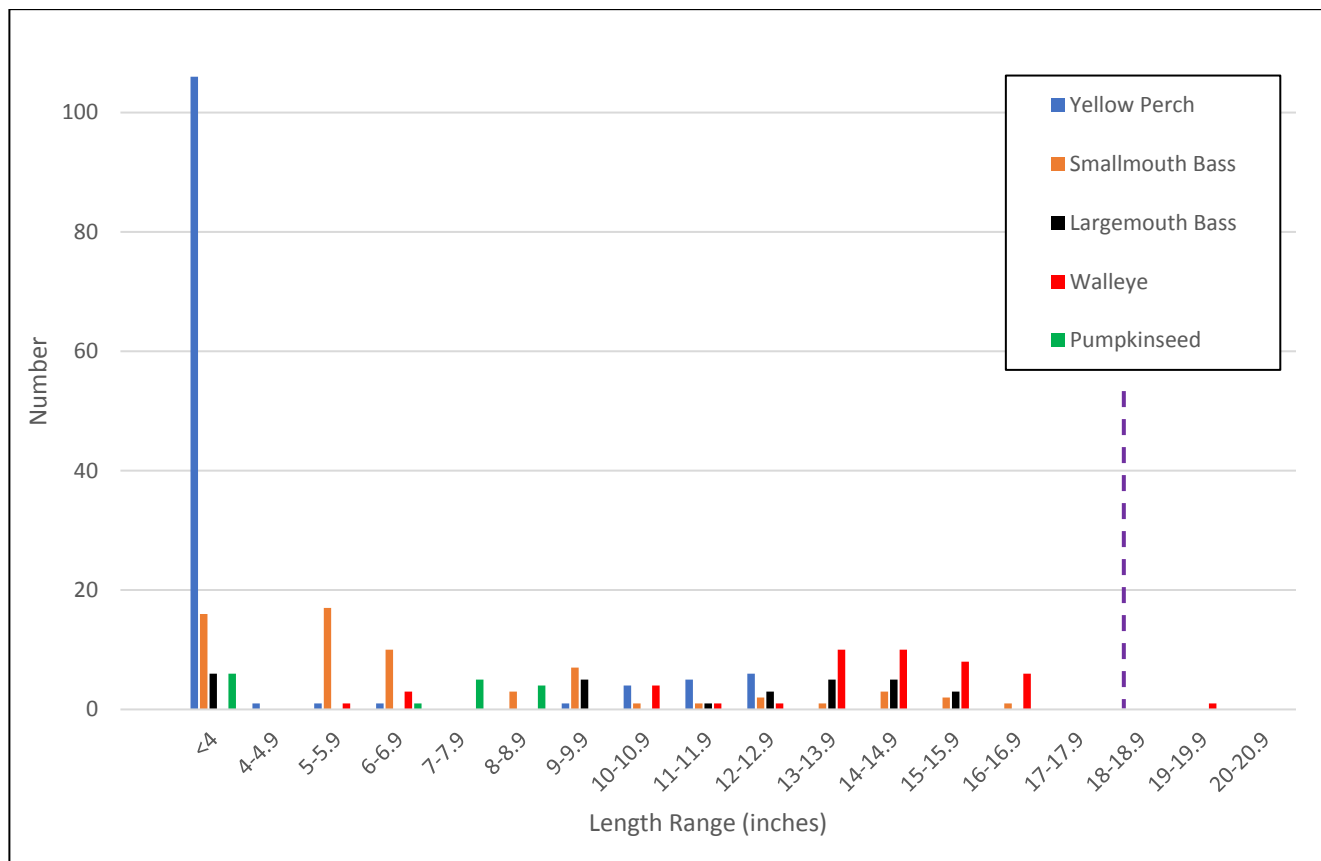


Figure 1. Length frequency histogram showing number of fish per length range for the five most abundant species collected. Dashed line indicates the minimum length for walleye to be harvested under the current special angling regulations.

A review of the stocking history suggests that in 2015 tiger musky may have been overstocked creating a situation where forage is severely limited. Walleye stocking has since been reduced to alternate years to promote recovery of the forage base. Reduction of the walleye minimum size limit is under consideration for future regulation changes as they have difficulty reaching the current minimum harvestable length of 18 in.

Literature Cited

Forney J. L., L. Rudstam, D.M. Green, D. Stang. 1994. Percid Sampling Manual. Chapter 3 in Fish Sampling Manual. New York State Department of Environmental Conservation, Bureau of Fisheries, Albany, NY.