



Lake Angeline, Marquette County

Lake Angeline Fisheries Survey May 3-5, 2015

Introduction: A May 2015 general fisheries survey was conducted at Marquette County's Lake Angeline to assess the status of the fishery and to allow for the development of future sportfish management opportunities for this lake.

- **History:** Lake Angeline has a long history of quality fisheries management with periods of very good rainbow trout occupation and periods of excellent tiger muskellunge presence. The first stocking of rainbow trout occurred in 1948 and continued until 1969. Due to trout competition from yellow perch and other warmwater fish species, tiger muskellunge were stocked, not annually but very regularly, from 1970 – 1990. Citizen opposition and/or support of the muskellunge stocking was very vocal during the muskie years, with many petitions and passionate letters being sent to State legislators and Michigan tenured Governors.

Historical data reveals that a natural lake occupied this site before mining operations were ever begun. The water was named Lake Angeline in 1849 by Captain Sam Moody and as the City of Ishpeming developed, the lake was the source of water supply for the community. The lake was pumped dry in 1892 and 20 million tons of iron ore were removed from the rock strata beneath the lake by means of a mining shaft and drifts. Cave-ins after the mining was abandoned created many of the depth pockets of the lake's bottom topography.

The State of Michigan DNR obtained a parcel of property ownership from Cliffs Forest Products Company in November 1984, however the easement to this parcel crossed private land and due to alleged public dumping of trash on the private land, access to the State parcel was severed in 1994. A 2014 land acquisition at Lake Angeline resolved the 20 year loss of legal public access to this lake. In the summer of 2015, a public boat launch was constructed by the Michigan Department of Natural Resources Parks and Recreation Division.

Gasoline outboard motor use was prohibited on this lake for many years, since this lake was identified as a municipal water supply for the City of Ishpeming. Recently the gas motor restriction was rescinded by the City commissioners, therefore gasoline outboard motor use is allowed.

Physical features: Lake Angeline is 96 acres in size with no inlets or outlets. The lake has a pronounced contour profile with numerous deep topographic pockets and a pronounced 162 foot cave in the north basin of the lake. The shoreline's riparian zone is almost entirely undeveloped with a few homeowner mowed lawn yards on the west shore of the lake. The water is moderately turbid containing a light brown stain, with clarity of approximately 14 feet. Shoal area boulders, logs, and steep drop-offs are common.

- **Biological features:** Aquatic vegetation is sparse.



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Methods and Materials: 4 Gillnets were set for 6 net nights and 3 Fyke nets for 3 net nights.

Results: The netting effort produced the following catch: lake trout: 4 (20-21"), brook trout: 2 (11-13"), largemouth bass: 4 (8-17"), smallmouth bass 4 (11-18"), common white sucker: 400 (10-20"), yellow perch: 30 (5-7"), pumpkinseed sunfish: 28 (4-7"), bluegill: 1 (7"), black crappie: 2 (8"), and golden shiner: 6 (7-9").

Discussion: Stocking of lake trout, rainbow trout, or brown trout has been conducted almost annually over the past 10 years and longer. Anglers comment that they have reasonably good success catching these trout. The spring 2015 netting effort documented over-winter survival of trout along with the presence of a diverse panfish sport fishery. The 2015 netting results are similar to what was found during the 1992 and 1994 surveys. No brown trout were caught during this netting effort; however past introductions of sizeable browns occurred in 2004, with a recent introduction of 5,000 browns in June 2015, although these fish were only 2.2 inches in length and will take a year to become legal. In the spring of 2016, the stocking of 200 adult lake trout (15 inches in length) will be conducted in an effort to ensure the presence of trout for the upcoming spring fishery. Collectively the fish species within this lake provide a nice hook-and-bobber and near-shore fishery for panfish as well as a mid-water fishery for trout.

The sportfishing size limit for all trout species within this lake will be reduced to an 8 inch minimum, beginning on April 1, 2016.

Recommendations: Continued stocking of lake trout, rainbow trout, and brown trout will be prescribed for this lake. Walleye should not be introduced into this fishery because this lake does not support the forage base to sustain good length/growth of this species.

