Lake Michigamme

Darren Kramer, Northern Lake Michigan Management Unit Manager

Jennifer Johnson, Fisheries Biologist

Overview

- Fish Management History of Lake Michigamme
- Brief Overview of 2016 spring survey
- What's next
- Q & A

Basic Lake Features

- 4,360 acres
- 36 miles of shoreline
- Numerous islands found throughout
- Max depth of 72 feet
- Shallow areas less than 20% of the lakes surface area (<15 feet)
- Nutrient-poor, rocky, acidic soils= low productivity
- Peshekee and Spur Rivers- major inlets

Fish Management History Reports

1. *Fisheries Survey of Lake Michigamme* C.J.D. Brown Institute of Fisheries Research 1940
2. *Lake Michigamme Fisheries Survey Report* Jerry Peterson Fisheries Biologist 1977
3. Fisheries Management Plan for Lake Michigamme William Bullen Fisheries Biologist 1984
4. *Lake Michigamme Status of the Fishery Resource Report* George Madison Fisheries Biologist 1994
5. *The Fish Community and Fishery of Lake Michigamme, Baraga and Marquette Counties, Michigan in 2006 with Emphasis on Walleye and Northern Pike* David Caroffino and Patrick Hanchin Fisheries Division Report 2011

1940 Report

- Water is “soft” and “very poor in lime”. Soft water lakes of this type much less productive”
- Aquatic vegetation “very scant”
- “Lake Michigamme has too little vegetation for the maximum productivity of fish”
- Waterfleas, rotifers and algae were fairly abundant (only one sample), mayflies, midge larvae, amphipods

Photo: Fishweb.com

1940 Report

- Previous stockings (1936-1939):
  - 40,000 perch unknown life stage
  - 6,030,000 walleye fry
  - 6,000 rainbow smelt adult
  - 2,500 lake trout adult

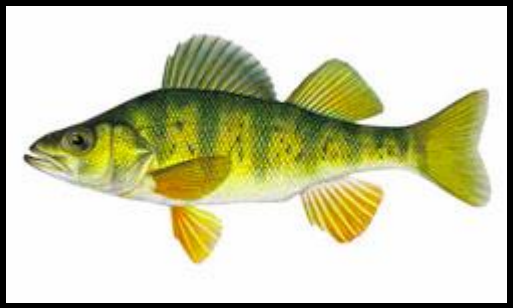

Photo: Absolutemichigan.com

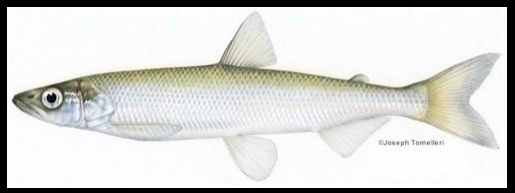

Photo: maine.gov

Photo: maine.gov

1940 Report

- Perch most abundant game species followed by black crappie, smallmouth bass, and northern pike
- Bluegill, largemouth bass, and walleye rare
- Forage species not very abundant. Golden shiners and bluntnose minnows were common. Common shiners and Iowa darters also present.

Island on Lake Michigamme 1940s. Contributed by Paul Petosky www.genealogytrails.com

1940 Report

- Management Suggestions & Analysis
  - Keep pike lake designation
  - Lake does not offer suitable conditions for sunfish, bluegills, and largemouth bass.
  - Uncertain about the success of the perch stocking efforts. Very limited weeds beds make this questionable.
  - More careful attempt to establish lake trout (ie. Stock larger fish)
  - Walleye stocking results discouraging.
  - “There is no reason to believe that Lake Michigamme cannot maintain a population of northern pike, smallmouth bass, perch and lake trout. The lake is not rich however, and no phenomenal production can be expected.”

1940-1976

- Stocking:
  - Lake trout: Adults stocked 1941-1943, fingerlings in 1963. Deemed unsuccessful
  - Walleye: Fry were stocked in 1940 and adults in 1942.
  - Splake: stocked in 1973. Deemed unsuccessful.
  - Smelt: 1942: Deemed unsuccessful.
- 1947-1949: Poor perch but good walleye fishing, excellent spawning runs in the Peshekee River.
- 1940-1970s: Northern pike population low
- 1950: Fishing reported to be very poor for walleye and perch, pike and crappies fishing described as good. Lake whitefish first documented in survey.
- 1957: First reported muskellunge caught in Lake Michigamme
- 1958: Good walleye fishing
- 1972: Fisheries survey documents good walleye numbers with population at an all time high. Good numbers of whitefish, but perch numbers were very low. Rock bass first confirmed in lake.
- 1976: Walleye numbers down, perch and muskie numbers up.

1977 Report

Survey October 4-8, 1976

Management options and reasoning why to reject or recommend them:

1. Allow things to continue as they are and make no management changes.
   - Rejected because we would be derelict in our duties. Feasible alternatives are available.
2. Introduce more salmonids
   - Rejected because of the vast size of the lake and poor success of previous stocking attempt.
3. Increase the forage base for warm water species
   - Rejected because productivity and nutrient level is low. No techniques available to materially increase the productivity in a lake this large. Without increase in basic nutrient level, enhancement of the forage base appears impossible.
4. Manipulate size limits for bass, northern pike and walleyes
   - Rejected. Lowering the limit could jeopardize the reproduction of the fish. With the growth rates being very slow (walleye), increasing a size limit not a guarantee to produce larger fish. Ultimately, forage is the limiting factor, not angler harvest.
5. Chemically treat the existing fish population to reduce its abundance and reintroduce a suitable species
   - Rejected. Lake Michigamme is too large to consider chemically treatment that would prove effective. Too $$$$
6. Introduce a predator into the lake that can take advantage of the limited forage base
   - Recommended. The survey caught two muskellunge in excellent condition and a state record muskellunge was caught by an angler. Muskellunge are able to utilize whitefish and suckers as forage. Stockings should allow for the development of a trophy fishery.

Stocking after 1977 Report

- Tiger muskellunge stocked
  - 1978: 1600 fall fingerling
  - 1979: 4,350 average size 5.35 inches

Photo: wdfw.wa.gov

1984 Report

Surveys in October 1982 & June 1983

- Confirmed reports of poor walleye and perch fishery
- Evaluation of tiger muskellunge stocking: Determined unsuccessful
  - Northern muskellunge had continued to increase naturally
  - Northern pike again increased in abundance. Tiger muskellunge stocking efforts often don't succeed when pike abundance is relatively high.
- Recommendations on an experimental basis:
  1. Yellow perch transferred from nearby lakes whenever possible to improve the perch fishery and walleye forage base
  2. Walleye fingerlings stocked every other year. If no acceptable increase in appropriate year class strength results, stocking should be discontinued.
  3. Smallmouth bass transfers when available
  4. Lake trout yearlings should be stocked for two consecutive years. Stocking should not continue unless survival of larger stocked fish is good and a fishery is created.
  5. Remove suckers by netting off the river mouths. Reduction of suckers may increase growth and reproductive success of game fish.

1983-1993 Efforts and Conclusions

- Stocking
  - Walleye: 1983,1984, 1986,1988, 1990, 1992 Spring Fingerings
  - Yellow perch: 1983, 1984 transfers.
    - Never created a change in population numbers.
  - Smallmouth bass: 1984,1985, 1989,1992
- Sucker removal: 1988
  - Blocked the majority of fish movement into the Peshekee and Spur Rivers. This effort captured 4,129 lbs of suckers which was insignificant in proportion to the total sucker population. It did not appear that a significant portion of the white suckers moved up these rivers to spawn. It is likely that suitable spawning habitat exists lakewide to enable suckers to maintain their numbers, without running the rivers.
- 1988-90: Walleye and smallmouth bass fishing reported as good.
- 1992: Walleye and perch fishing reported as poor.
- 1993: Fisheries survey documents good numbers of whitefish, low numbers of walleye and perch.

1994 Report

- Rock bass population increased over eight fold from 0.54 in 1976 to 4.5 in 1993. Dominant fish in the shoal areas. When walleye, bass, or pike hatch they likely face significant predation by rockbass.
- Walleye lake spawning run influenced by springtime water levels. Over a 30 day period from ice-out to mid May, the water level of the lake drops 3-4 feet. This likely impacts survival of newly laid walleye eggs.
- Northern pike and muskellunge populations present in low numbers and would not be expected to exert a detrimental influence on other fish species.

- Recommendations:
  1. Continue stocking walleye, smallmouth bass, and yellow perch when available. In an attempt to boost the numbers of walleye naturally reproduced, the stocking of large numbers of walleye fry should be implemented.
  2. Northern pike and muskellunge provide control of the sucker population and to a lesser extent on the rock bass. Management efforts should protect spawning habitat.

1994-2005

- Stocking
  - Walleye: 1994,1998, 2002
  - Smallmouth bass: 1997-98
  - Lake trout: 2001-2005
  - Splake: 2000, 2002, 2003, 2005
  - Brook trout: 2000-01,2003-2005
  - Rainbow trout: 2002

2011 Report

- Survey efforts April 13-27, 2006
- A total of 3,935 fish representing 15 species were collected
  - 2,326 Walleyes (57% total catch)
  - 653 Northern pike (17%)
  - 117 smallmouth bass (3%)
- Sample community composition was
  - 80% piscivores (walleye, northern pike, smallmouth bass, largemouth bass, burbot, muskellunge, tiger muskellunge),
  - 17% pelagic planktivores-insectivores (rock bass, pumpkinseed, yellow perch, black crappie, brook trout)
  - 3% benthivores (white sucker, black bullhead, lake whitefish)

2011 Report

- Growth rates
  - Walleye were 3.5 inches below state average
  - Northern pike were 0.3 inches above state average
  - Smallmouth bass were 1.8 inches below state average
- Recruitment
  - Walleyes were represented by 17 year classes (ages 2-18)
  - Northern pike were represented by 11 year classes

2011 Report Summary

- All fisheries reports written about Lake Michigamme have mentioned its low productivity. Lake Michigamme cannot support a large fish community because it lacks the necessary nutrient base.
- Present data suggests that natural reproduction is successful, consistent, and likely sufficient to maintain the walleye population.
- Northern pike are much less abundant than walleyes. Northern pike growth rates exceeded state averages- this is noteworthy because most other lakes in the area have slow growing northerns. Recruitment is consistent and no missing year classes were observed.

2016 Survey

Species	Total Number	Size Range	Comments
Walleye	390	9”-30”	Skinny fish, averaged 14”
Northern Pike	195	8”-41”	Healthy, stout fish
Tiger Muskellunge	1	42.5”	
Muskellunge	1	17.6”	

Field Notes: Lake whitefish, burbot, rock bass, smallmouth bass, and black crappies were observed during shocking efforts.

Shocking Effort: 50.5 hours between 3 boats.

One more thing to consider…

- Spiny waterflea- invasive species in Lake Michigamme since at least the mid-1990s.
- Feeds on zooplankton and phytoplankton
- **Local Concern:** The spiny waterflea causes major changes in the zooplankton community structure, reproduce rapidly, and compete directly with small fish for food. Additionally, they foul fishing gear when their tail spines get hooked on fishing lines.

Bill O'Neill, University of Wisconsin Sea Grant

Jeff Gunderson, Minnesota Sea Grant

Future timeline

- Winter 2017
  - Age & Growth analysis
- June Fish Community Survey
  - Enable more thorough evaluation of other species
- Fall & Winter 2017-18
  - Data entry & analysis
- Spring 2018 Management Options Proposed & Discussed

Q & A Time!