

## **MANN CREEK**

*Allegan County (T3N, R15W, Sec. 17, 21, 28, 34)*

**Surveyed August 19, 1996**

**Jay K. Wesley**

### **Environment**

Mann Creek is a first-order stream classified as top-quality, coldwater. Flowing across Clyde and Manlius townships in Allegan County, Mann Creek originates in the Allegan State Game Area, east of the town of Fennville. It flows in a northwesterly direction and enters the Kalamazoo River near New Richmond.

Mann Creek is characterized as a straight to meandering stream that flows unconfined in a wide lacustrine plain. The topography of the watershed is that of gently rolling hills composed of medium to well-drained moraines and flat plains. The valley slope is low at about 5.5 ft/mi. The upper two-thirds of the creek is flat as it runs through large wetland complexes. The lower third has more gradient as it cuts down into the Kalamazoo River valley. Soils in the drainage include well-drained sandy soils (Oakville-Covert associations) with some poorly drained mucky soils (Adrian association). Land cover in the watershed is primarily forest with some agriculture, wetlands, and urbanization.

The total length of Mann Creek from headwaters to mouth is about nine miles, and it has a watershed size of 17.4 mi<sup>2</sup>. This survey concentrated on the lower four miles. The average width is 17 ft, with depths averaging 0.6 feet. On average, substrates are composed of sand (60%), silt (20%), gravel (15%), and silt (5%). Water velocities are slow to moderate. Overall, habitat is good, consisting of mostly overhanging brush and small logs with some riffles and pools.

Water quality appears to be excellent, based on the presence of brook trout. Acidity (pH) was 8.0, and

alkalinity was 148 ppm when measured on August 29, 1996. Water temperature at 54<sup>th</sup> Street was monitored in 1995. The mean July temperature determined by continuous-recording thermometer was 62.4°F. The maximum temperature was 72.3°F. The total July degree-days was 975°F, which is colder than average for a trout stream in southwest Michigan. Wehrly et al. (1999) developed thermal classifications for Lower Michigan rivers that can be used to describe the thermal distribution of stream fishes and generate expectations of species assemblages. Using these classifications, Mann Creek is most suitable for brook trout.

Development along the creek is sparse due to the wetland nature of the stream corridor. Public access is good because the Allegan State Game Area borders most of the stream.

### **Fishery Resource**

Brook trout were stocked in Mann Creek by the State from 1933 to 1965 and again from 1984 to 1992. Stocked trout varied from month-old fingerlings to yearlings. In addition, brown trout were stocked in 1949, and rainbow trout were stocked in 1943, 1944, and 1961.

Anglers have been attracted to Mann Creek for decades. Creel-survey summaries from the 1950s and 1960s indicated high angling pressure. One angler claimed to have caught 200 brook trout in 1992, with one as large as 16 inches in length. Carryover of stocked trout has always been good, and natural reproduction has been evident since fish surveys began.

The earliest fish survey on file for Mann Creek was conducted in 1929. The survey probably used seining gear. At that time, the brook trout population was reported as "plentiful." In addition to brook trout, a few mud minnows and creek chubs were also found. Although no records exist of stockings in the early 1900s, trout probably were stocked there by train because a track crosses the creek.

Mann Creek was not surveyed again until 1968. This survey (and all others afterwards) used a 110-V DC backpack electroshocker. Only one site at 130<sup>th</sup> Street was sampled for 30 minutes. One 6.8-inch brook trout was collected along with white suckers and mottled sculpins.

In 1972, Mann Creek was shocked for 40 minutes at 57<sup>th</sup> Street. The survey yielded nine brook trout from 3.5 to 9.8 inches in length. Other species collected that have not already been listed above include pumpkinseed, bluegill, and Johnny darter.

Surveys were also conducted at 57<sup>th</sup> and 130<sup>th</sup> streets in 1982 and at 128<sup>th</sup> and 130<sup>th</sup> streets in 1987. Similar collections of brook trout were made compared to previous surveys, with catch per unit effort (CPE) ranging from 4.5 to 17.0 fish per hour. Shocking efficiency was noted as poor, especially at 128<sup>th</sup> Street, due to thick growths of tag alders. Additional species included rainbow trout, rock bass, burbot, common shiner, and blacknose dace.

In 1992, 128<sup>th</sup> Street was surveyed again. A total of 23 brook trout were collected with a CPE of 27.7 fish per hour. Twenty-one of the 23 fish were from natural reproduction. A wild 3-inch brown trout and a 7-inch rainbow trout were also collected. New species included green sunfish and grass pickerel. A similar catch was found at 130<sup>th</sup> Street, where 15 out of 17 brook trout appeared to be wild, with a CPE of 15.5. As a result of this survey, brook trout stocking was discontinued in 1993 to reduce competition between wild and hatchery-reared trout. Furthermore, it was evident that hatchery trout were not contributing much to the total population.

The most recent work on Mann Creek, conducted August 19, 1996, was a brook trout population

estimate and evaluation of three years without stocking. Habitat conditions have remained constant since characteristics were first reported in 1968. Only trout were reported during this survey. At 57<sup>th</sup> Street, no brook trout and only one 8-inch rainbow trout were collected. Only three brook trout were collected between 7 and 10 inches in length at the 130<sup>th</sup> Street site. The CPE was 6.0, which was lower than the 1992 CPE of 15.5. Thirteen brook trout were caught at 128<sup>th</sup> Street. The CPE was 26, and there was an estimated 256 brook trout per acre (Chapman-Peterson population estimate) but only 7.2 lbs. per acre at this site. The CPE was similar to the 1992 survey. Other than the decrease in CPE at 130<sup>th</sup> Street, the brook trout population was self-sustaining and appeared healthy since stocking was discontinued in 1993.

Brook trout growth was good at 0.7 inches above the State average (Table 1). Ages 0-3 brook trout were collected, with 58% at age 1 indicating good survival of the 1995 year class. The 8.1-inch rainbow trout (steelhead) was age 2.

Competition from rainbow trout (steelhead) appears to be insignificant, although research implies that potamodromous salmonids compete with resident salmonids (Fausch 1981, 1986; Zeigler 1988). Potamodromous runs up the Kalamazoo River into Mann Creek do not appear to be inhibiting the brook trout fishery. Recruitment of steelhead appears to be too low and no recruitment of coho or chinook salmon have been documented to date.

### **Management Direction**

Mann Creek should continue to be managed as a top-quality, coldwater, designated trout stream. Natural reproduction is sustaining the brook trout population without any need for stocking. Angling reports continue to be positive since stocking has been discontinued. Future stocking of brook trout is not warranted due to poor survival, competition with wild brook trout, and the high cost of transporting fish all the way from the Marquette State Fish Hatchery.

Angling opportunities could be improved with brushing projects at 128<sup>th</sup> and 130<sup>th</sup> streets. Tag alders have made these sites difficult to survey and fish. Habitat could also be improved by increasing exposed gravel and decreasing the sand bedload. Further investigations are necessary before any projects are started. The high sand bedload may be natural because the creek flows across mostly lacustrine sand plains rather than from erosion from point or non-point sources.

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### References

- Fausch, K. D. 1981. Competition among juveniles of coho salmon, brook trout, and brown trout for resources in streams. Ph.D. Dissertation, Michigan State University, East Lansing.
- Fausch, K. D. 1986. Competition among juveniles of coho salmon, brook trout, and brown trout in a laboratory stream, and implications for Great Lakes tributaries. Transactions of the American Fisheries Society 115:363-381.
- Wehrly, K. E., M. J. Wiley, and P. W. Seelbach. 1999. A thermal habitat classification for Lower Michigan rivers. Michigan Department of Natural Resources, Fisheries Division Research Report 2038, Ann Arbor.
- Zeigler, R. L. 1988. Stream resource utilization of sympatric and allopatric juvenile brown trout (*Salmo trutta*) and steelhead trout (*Salmon gairdneri*). Michigan Department of Natural Resources, Fisheries Research Report 1957, Ann Arbor.

Table 1.—Average weighted total length (inches) at age, and growth relative to the State average, for fish sampled from Mann Creek with 110-V DC backpack electroshocker, August 19, 1996. Number of fish aged is given in parentheses.

Species	Age							Mean growth index <sup>1</sup>
	0	1	2	3	4	5	6	
Brook trout	4.1 (3)	6.4 (7)	10.0 (1)	10.6 (1)	...	...	...	0.7
Rainbow trout	...	...	8.1 (1)	...	...	...	...	...

<sup>1</sup> Mean growth index is the average deviation from the State average length at age.