Michigan Department of Natural Resources
Status of the Fishery Resource Report 91-16, 1991.

East Branch Paw Paw River (and Mattawan Creek)

Kalamazoo County (T3S, R12W, Section 31)
Van Buren County (T3S, R13W, Sections 10, 11, 13, 14-18, 20-22, 25-27, 36 and T3S, R14W, Section 13)
Surveyed August 24, September 5 and 10, 1990

James L. Dexter, Jr.

Environment

The East Branch of the Paw Paw River is one of many large tributaries to the main stream of the Paw Paw River. A second order designated trout stream with a water quality designation of top quality cold, the East Branch flows in a westerly direction until it flows into Maple Lake in the Village of Paw Paw.

Most of the East Branch flows through nearly level, very poorly drained soils which have moderate water capacity and slow surface runoff. These soils fall into the categories of either Houghton muck or Glendora sandy loams. The surrounding area of the stream is mostly small wooded lots, fallow farmland, and new residential home sites. Land around the East Branch is becoming very popular for new homes.

Estimated to be 8.4 miles long, the East Branch has two main sources. Little Paw Paw Lake in Kalamazoo County and Mattawan Creek (first order) in the Village of Mattawan. This small creek starts in a swampy area just to the southeast of the Village. Both the creek and the East Branch pick up considerable amounts of ground water. Total fall for both of the streams is about 150 feet from the sources to the confluence at Maple Lake. Mattawan Creek averages 7 feet wide and 6 inches deep. Habitat includes pools, logs, riffles, and watercress, all common to the upper third of the creek. The lower two-thirds has been dredged.

The East Branch ranges from 11 to 24 feet wide, averaging 16.8 feet wide, with an average depth of 1.3 feet. Discharge measurements made during various seasons in the 1960s showed that flows ranged from 2&endash;8 cfs in the upper reaches to 15&endash;30 cfs in the lower reaches before entering Maple Lake. Habitat is good, with overhanging brush, undercut banks, pools, riffles, and logs all being common throughout many sections of the river. Gravel and rock occur throughout the river bottom, but average 36% and 5% of the available substrate, respectively. Sand predominates (47%), silt accounts for 10% of the substrate, and some traces of clay occur in the lower reaches. Comparing these estimates of bottom substrate composition to those estimated in a 1967 survey, it appears that up to 1/2 of the gravel substrate has been buried by an increase in sand bedload. No large known sources of sand input are known to exist.

No land is owned by the State along the banks of the East Branch. Some bridge locations where access is possible are posted "no trespassing", but landowners do allow access to anglers upon request. Two small dams exist in the middle reaches of the East Branch and there is another dam at the lower end. Development in the watershed is limited to mostly residential home sites, and these are not excessive at this time.

Fishery Resource

The East Branch has been managed for trout since at least 1934 when brook trout were planted. No trout stocking took place in 1965&endash;1968 and 1970. For most years between 1939 and 1965, combinations of brook, brown, and rainbow trout were stocked. Since 1971, only brown trout have been stocked.

Anglers have been attracted to the East Branch for decades. Records from the 1950s indicate intense pressure, primarily by bank anglers. Trout as large as 20 inches have been captured during surveys, and anglers have reported brown trout as large as 27.5 inches (7 pounds, in 1985). Carryover of stocked trout has always been good, and natural reproduction has been evident since surveys began.

In 1990, the East Branch was surveyed with a 240-Volt DC shocker unit (two probes and output of 4 amps). The fish community was found to be similar to that of 30 years ago (Table 1). Brown trout are the only pursued gamefish in the East Branch. Mottled sculpins, creek chubs, white suckers, and hornyhead chubs are all more numerous than trout, but not to the extent of overabundance. In Mattawan Creek, which was surveyed with a backpack shocker, only brook trout and modest numbers of four other species were found (Table 2).

During the 1990 survey, brown trout were found at 4 of 6 locations on the East Branch. Seventy-nine percent of these trout were 8 inches or longer. No trout were found at the upper two stations, which are strongly influenced by Little Paw Paw Lake. Water temperatures in this area are most likely too warm to support trout, as historically these locales have not produced them.

Wild brown trout were found at each of the four stations. These were determined to be wild based on size (young-of-the-year at 2 to 3 inches) and fin characteristics. Hatchery browns are easily distinguished by eroded fins, or regenerated crooked fins. Of the brook trout captured in Mattawan Creek, all were wild fish, with most of these being young-of- the-year. No records exist of stocking this creek. Brook trout stocked in the East Branch during the 1930s, '40s and '50s may have traveled up this small tributary and became established.

Growth rates of brown trout were very good, with age groups I&endash;III all growing well above the State average rate for this species. Age II brown trout averaged 11.7 inches, while the one age III trout was 15.4 inches. Brook trout from Mattawan Creek were also growing above the State average, averaging 6.4 " at age II. Of four

largemouth bass captured in the East Branch (ages II&endash;III), all were growing well below State average rates (lake averages), attesting to the hostile environment to warmwater species growth.

When comparing the results of this survey on the East Branch with past surveys (1962, 1966, and 1975), a very interesting history is revealed. Catch per unit effort for brown trout has declined after each sampling period. Catch per hour of electrofishing was highest in 1962 (59.5), followed by 1966 (29.5) and 1975 (19.5), and lowest in 1990 (13.7). What is interesting here is that no brown trout were stocked from 1958 through 1967. Survey results from 1962 and 1967 represent collections of all naturally reproduced brown trout. Legal size browns were stocked at an average rate of 1,150 per year between 1947 and 1957. These were stocked in conjunction with an average of 2,300 legal size brook trout and 800 legal size rainbow trout. Surveys during the 1960s took only one 6&endash;inch brook trout, no rainbow trout, and many brown trout.

Bachman (1982) found that when hatchery trout were stocked into a wild population, many agonistic encounters took place between the two. Most often, larger hatchery trout chased smaller wild trout out of their territories. When these hatchery trout encountered larger wild trout, they would not chase the wild trout out, but they did cause severe stress to the wild fish.

Based on information collected on the East Branch over the past 30 years and related research, it seems highly likely that the present stocking schedule is severely impacting the potential to create an even better wild trout fishery. Currently, more than 3,000 yearling brown trout are stocked per year.

Management Direction

The East Branch and Mattawan Creek should continue to be managed as top quality coldwater designated trout streams. Even though present survey results of the East Branch do not indicate high recruitment rates of brown trout, I have to believe that those rates would soar upon termination of all stocking in the system. Holdover of trout through the winter is very good, and all surveys have indicated the ability of the stream to produce large trout. I recommend that stocking be terminated for a 4&endash;year period (1992&endash;1995) and a full survey, structured after the 1990 field work, be completed during the summer of 1995. A spot check survey should be conducted in 1993 to monitor progress.

The creation of a wild trout fishery will take at least 3 years to fully materialize after stocking has ceased. The goal will be to create a larger population of trout than that recorded during the 1975 and 1990 surveys, periods when trout stocking occurred.

An obstacle to attainment of this goal is the higher bedload of sand that is present now compared to 30 years ago. It is not known if this increase has been enough to limit reproduction success, but sufficient spawning areas appear to be present.

Species other than trout are not so abundant that trout are impacted negatively. No instream habitat restoration is needed in any great amount, and no problems can be foreseen with water quality at this time for the East Branch. Mattawan Creek does not require any management activity.

Report completed: October 1991.

References

Bachman, R.A. 1982. Foraging behavior of free ranging wild brown trout (Salmo trutta) in a stream. Ph.D. dissertation. The Pennsylvania State University, University Park.

Table 1 Species, relative abundance, and length of fish collected by stream electrofishing at six sites on the East Branch of the Paw Paw River, August 24 and September 5 and 10, 1990.

Species	Number	Percent	Length Range (inches)
Mottled sculpin	215	41.3	0-3
Creek chub	87	16.7	1-8
White sucker	81	15.6	1-12
Hornyhead chub	51	9.8	2-5
Brown trout	24	4.6	3-15
Common shiner	14	2.7	1-5
Johnny darter	11	2.1	1-2
Blacknose dace	8	1.5	1-3
Green sunfish	6	1.1	1-5
Yellow bullhead	6	1.1	4-10
Central mudminnow	6	1.1	2-3
Bluntnose mudminnow	5	1.0	1-3
Largemouth bass	4	0.8	6-9
Rainbow darter	2	0.4	2
Northern hogsucker	1	0.2	7
Total	521	100.0	

Table 2 Species, relative abundance, and length of fish collected by backpack electroshocking at Mattawan Creek, a tributary to the East Branch of the Paw Paw River, September 10, 1990.

Species	Number	Percent	Length Range (inches)
Blacknose dace	28	42.4	2-3
Brook trout	22	33.3	2-7
Central mudminnow	10	15.2	2-3
Creek chub	5	7.6	3-5
White sucker	1	1.5	4
Total	66	100.0	

EAST BRANCH PAW PAW RIVER

Van Buren County (T3S, R13 and 14W, Sections, many)
Kalamazoo County (T3S, R12W, Section 31)

MANAGEMENT PLAN

based on
Status of the Fishery Resource Report 91-16

James L. Dexter, Jr.

Information collected over the past 30 years on the East Branch indicate that the stocking of brown trout is severely impacting the possibility of attaining a trout fishery that is entirely composed of wild trout. One of Fisheries Division's primary goals is to promote the increase of wild trout where at all possible, while maintaining or improving the fishery.

The management goal for the East Branch will be to regain a wild population of trout similar to that found in fisheries surveys of the 1960s when no brown trout stocking took place. Two objectives will need to be met in order to attain the goal. Objective 1 will be to terminate stocking of all brown trout in the East Branch for a period of 4 years (1992&endash;1995).

Objective 2 will be to conduct a repeat of the 1990 survey in August of 1995 and a spot check in 1993 to see what progress is being made by the trout population. A catch per hour of at least 15 trout would be considered successful. Further discontinuation of stocking will depend on the outcome of that survey.

Expected results would include an increase in the CPE of trout and a large increase in the number of young-of-the-year captured. The only obstacle I see to attainment of

these results is reproductive failure (lack of recruitment) because of increased sediment loads since the 1960s.

Plan completed: October 1991
Approved: David C. Johnson, District Fisheries Biologist, November, 1991
Donald E. Reynolds, Regional Fisheries Biologist, December, 1991

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