

## **ROCKY RIVER**

*Cass County (T5S, R13W, Sections 23, 24, 26, 27, 28, 29, 30)  
St. Joseph County (T5S, R12W, Sections 19, 20, 21, 22, 23, 24, 25, 36)  
(T6S, R12W, Sections 1, 12, 7), and (T6S, R11W, Section 18)*

**Surveyed July 11-13, 17, and August 3, 6, 1990**

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### **Environment**

The Rocky River is a marginal trout stream with most of the trout water located in the northeastern corner of Cass County. The stream exits Cass County as a third-order stream, and continues into St. Joseph County where it enters the St. Joseph River in the town of Three Rivers. The headwaters are classified as top-quality coldwater, while the remainder of the stream (starting just south of Marcellus) is classified as second-quality coldwater. The town of Marcellus is located less than two miles from the good trout sections of the Rocky River.

Flowing through a patchwork of active and fallow farmland, swamps, and small blocks of forests, the Rocky River exhibits moderate summer flows (roughly 50-75 cfs). Flood flows can get very high, especially near Three Rivers, where flows in excess of 900 cfs have been recorded. The majority of the watershed lies in well-drained loamy soils that encompass nearly level land to moderately rolling hills. The watershed is large, encompassing more than 100,000 acres (as measured from Floating Bridge Road upstream, P. Seelbach, Institute for Fisheries Research, personal communication).

There are 13 tributaries to this stream system. Three tributaries are classified as top-quality coldwater, two as second-quality coldwater, seven as top-quality warmwater, and one as second-quality warmwater. These tributaries are about equally divided as starting from spring sources or as outlets of small lakes. Flowerfield Creek is the largest tributary, entering the Rocky River in the middle stretches of St. Joseph County. This coldwater tributary virtually doubles the size of the river.

The Rocky River is estimated to be 25 miles long. Stream width averages 32 feet and depth averages 1.5 feet. Habitat varies considerably from section to section. Undercut banks, logs, aquatic vegetation, and overhanging brush are common to all areas. Channel sinuosity, the number of pools, and in-stream brush all vary from abundant to lacking. In the headwaters, bottom substrates are mostly silt, sand, and gravel, with some clay. Substrates in the middle portions are composed of 50% sand, equal amounts of gravel and silt, and a trace of rock rubble. The lower sections are mostly rock rubble, gravel, and sand, with some silt. The Rocky River falls approximately 90 feet from its source to its confluence. Water quality characteristics collected during this survey included alkalinity (144-214 ppm), pH (7.5), and dissolved oxygen (7.9-9.1 ppm). No historical data could be found concerning these characteristics.

Development along the river is limited to farms. Only one dam exists on the mainstream. This is located at the confluence with the St. Joseph River. In high water times, fish can navigate this low structure. No state ownership exists along the banks. Access is available with permission of landowners.

### **Fishery Resource**

Portions of the Rocky River have been managed for trout since at least 1938. For 7 years, between 1938 and 1946, combinations of brook, brown, rainbow trout, were stocked in the St. Joseph County portions of the river. Since then, this same area received up to 10,000 brown trout yearlings in 1977, 1978, and 1986-1990. The Cass County portion of the Rocky River has been stocked with brown trout since 1977, and is now the only area stocked (200 trout per acre).

The fish community of today (Table 1) most likely is no different from that of 50 years ago. Although no historical species assemblage is available, it is obvious from the recent data the St. Joseph County portions are highly influenced by the St. Joseph River.

Using various combinations of gear (backpack shocker at upper station, 250-Volt D.C. stream shocker with 2 or 3 probes at all other stations), this survey thoroughly delineated which waters are suitable for trout and which are not. Only the headwaters appear to be suitable for trout. In these areas brown trout (including wild trout), mottled sculpins, white suckers, and creek chubs predominated.

Starting at M-40 and continuing downstream, the species assemblage grows from 13 species at M-40 to 19 species at Hoffman Road in St. Joseph County. Below M-40 the fish community is much more representative of a coolwater/warmwater system, with rock bass, smallmouth bass, northern pike, bluegill, and largemouth bass present.

In the headwaters, brown trout 2-7 inches long were present (young-of-the-year and age I). The catch rate of brown trout in this area was 22.3/hr. In the rest of the river, we collected only 9 brown trout, 4-11 inches long (age I and II), at a catch rate of 3.5/hr. The only trout survey on file to compare with was done in 1978. Results of the 1978 survey were similar: brown trout CPE's were 12.5 in Cass County and 4.9 in St. Joseph County.

Growth rates of four species were determined-brown trout, largemouth bass, smallmouth bass, and bluegill. Although not enough scales were collected for 3 of the 4 species to say much about the mean growth index, generally most age groups of all species were growing above the state average rates. The good growth rates for bluegill and both bass species, and the presence of large fish, indicate that the environment from M-40 downstream is much better suited to these warmwater species than to trout. We sampled bluegills up to 7 inches, smallmouth bass up to 13 inches, largemouth bass up to 12 inches, and northern pike up to 34 inches in length.

### **Management Direction**

The upper portion of the Rocky River (in Cass County) should continue to be managed as a second-quality coldwater designated trout stream, receiving about 200 brown trout yearlings per acre. This level should maintain the present fishery. The level of survival of stocked trout is not known. The amount of successful natural reproduction does not appear to be enough to sustain the population. Also, we rarely hear from anglers who fish this area. Because of this, we will try to implement a tagging program to assess the level of angler use and survival similar to the study conducted on Augusta Creek in Kalamazoo County. This should be scheduled for 1995 or 1996.

This part of the state has very few trout quality streams. It is important that the present water quality in the headwaters be maintained to provide diversity for anglers in this area. One obstacle to attainment of this goal is intensive farming and irrigation. Water withdrawals and farm effluents may harm the system. To our knowledge, it is not a problem at this time.

Report completed: October 1991.

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**Table 1.**-Species, relative abundance, and length of fish collected by electrofishing at eight stations

on the Rocky River, July and August, 1990.

<u>Species</u>	<u>Number</u>	<u>Percent of total catch</u>	<u>Length range (inches)</u>
Blacknose dace	207	21.9	2-4
Creek chub	120	12.7	1-8
Common shiner	91	9.6	3-7
White sucker	72	7.6	2-18
Bluntnose minnow	65	6.9	2-3
Bluegill	50	5.3	1-6
Hornyhead chub	48	5.1	2-4
Blackside darter	45	4.8	1-5
Northern hogsucker	39	4.1	6-14
Rock bass	39	4.1	2-7
Brown trout	30	3.2	2-11
Mottled sculpin	27	2.9	2-4
Rainbow darter	20	2.2	1-3
Smallmouth bass	10	1.1	3-13
Common stoneroller	10	1.1	2-3
Lamprey sp.	8	0.8	6-7
Redhorse sp.	7	0.7	5-18
Johnny darter	7	0.7	1-2
Grass pickerel	7	0.7	2-8
Largemouth bass	6	0.6	1-12
Warmouth	5	0.5	2-6
Log perch	5	0.5	4-6
Carp	4	0.4	22-28
Pirate perch	3	0.3	2
Bullhead sp.	3	0.3	6-7
Green sunfish	3	0.3	4-5
Bowfin	2	0.2	16-20
Central mudminnow	2	0.2	3
Stonecat	2	0.2	6
Northern pike	2	0.2	6-34
Yellow perch	1	0.1	4
Rosy face shiner	1	0.1	3
Golden shiner	1	0.1	5
Lake chub sucker	1	0.1	3
Northern madtom	1	0.1	6
Total	944		

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Questions, comments and suggestions are always welcome! Send them to  
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