

## **BRANDYWINE CREEK**

*Berrien County (T8S, R17W, Sections 1, 2, and 3)  
Cass County (T8S, R17W, Sections 5, 6, 7, and 8)  
(T7S, R16W, Sections 28 and 33)  
Surveyed September 21, 1989*

**James L. Dexter, Jr.**

### **Environment**

Brandywine Creek is a top quality coldwater trout stream located in southwestern Cass County and southeastern Berrien County. It is a small second order stream that flows in a westerly direction through the city limits of Niles, Michigan, before it empties into the St. Joseph River.

Land use near the headwaters in Cass County are mostly agricultural with hog farming being the primary activity. The lower end of the creek is surrounded mostly by small woodlots and the suburbs of Niles. Most of the creek in Berrien County is underlaid with Oshtemo loamy sands, which are well drained. Further upstream the soil is composed of Cohoctah loamy sands, which are poorly drained.

Brandywine Creek is estimated to be 8.2 miles long. Stream widths average 14 feet, with an average depth of 2 feet. Many areas in the upper sections of the creek are very deep. Cover for trout throughout the creek is very good. Undercut banks, watercress, and deep runs characterize the upper third. Logs, pools, and overhanging vegetation are very common throughout the remainder of the creek. The bottom composition in the lower end is about 50% cobble and gravel, and 50% sand and silt. The creek falls about 110 feet from its headwaters to its confluence. The rest of the creek is characterized primarily by sand and some silt. No chemical characteristics of the water have been studied.

Limited information about the aquatic insect community is known. The majority of aquatic insect species identified are broadly classified as intolerant, meaning they can succumb easily to polluted water. Given this, the water quality must be good. Nine families of insects have been identified, including three species of stoneflies, two species of mayflies, and three species of caddisflies. Freshwater shrimp are very abundant, especially in the watercress, and are excellent food for trout.

There is no state-owned land along the banks of Brandywine Creek. However, access is very good. Private enterprises own a good portion of the lower river but allow free access. Upper areas are also easily accessed from bridge crossings. We understand that landowner permission is not hard to obtain.

## **Fishery Resource**

Brandywine Creek has been actively managed by the Fisheries Division for trout since at least 1933. Brook trout were planted almost every year from 1933 through 1944. No fish were stocked between 1945 and 1970. In 1971, brown trout stockings started and they continue today. Brown trout must have been stocked previously, however. In 1957, over 150 brown trout between 8 and 27 inches were removed by electroshocking prior to stream dredging by the county. The creek has always been popular among trout anglers. In fact, many anglers claim that fishing for browns was better before the Division started stocking brown trout.

The trout fishery of today appears to be better than those documented in previous surveys. The fish community is very typical of high quality coldwater streams, dominated by brown trout, sculpin, and white sucker (Table 1). Catch per effort was very high (126.4 per hour) for trout in September 1989 (collection made with 240-volt DC stream shocker and two probes). This compares to 58.7 per hour in 1982 (110-volt DC). Over 31% of the trout sampled in 1989 were legal size; the largest being 16 inches ([Figure 1](#)). Carp and central mudminnow were not collected in 1989 but were collected in previous surveys.

High levels of natural reproduction were evident at the lower sampling station, B-1 (T8S, R17W, Section 2). Natural recruitment of 3-4 inch brown trout appeared to be quite sufficient to sustain this section of the creek with wild trout ([Figure 1](#)). This area had large amounts of spawning habitat and nursery habitat available. The majority of the trout at Station B-1 appeared to be wild, as they were slightly different in color than brown trout collected at the upper two stations. It does not appear that any wild trout were found in the upper two stations.

The trout population of Brandywine Creek is very good. Water quality and fish health appear excellent. Such a high quality resource is quite rare in southwestern Michigan. Compared to streams of similar size and quality in Region III, Brandywine Creek rates very high. Fisheries Division's efforts to protect valuable habitat in the lower reaches have been commendable. The foresight of Fisheries personnel saved at least 600 feet of prime spawning and rearing habitat for trout in 1981. That year the bridge on 3rd Street (Station B-1) washed out, and plans were submitted to fill in the old channel and straighten out the creek. If that would have occurred, wild brown trout probably would not be present now. Prior to 1982 no wild trout were found in fisheries surveys.

## **Management Direction**

Brandywine Creek should continue to be managed as a top quality coldwater trout stream. It would be unlikely for the Division to produce a higher quality fishery than what is available today. No stocking should be made downstream of 15th Street, as these fish would impact on the wild population present in the lower reaches. Year-round habitat for trout is very good throughout all reaches of the creek. However, there is a

lack of spawning habitat, and possibly nursery habitat, in the upper areas. The two present stocking sites and stocking rates should be maintained.

No obvious sources of erosion were evident in this survey. Sand and silt seems to be the dominant material of the streambed in the middle and upper sections of the creek. Because of this, it is not practical to suggest habitat manipulation to increase natural reproduction.

Another potential obstacle to improving the trout fishery may be the fall runs of anadromous salmonids that will ascend Brandywine Creek after the Niles Dam ladder is completed. Some chinook salmon and steelhead were seen in the creek in 1989 after the trap and transfer operation at Berrien Springs. Research has shown that rainbow trout may compete with brown trout (Ziegler 1988).

Report completed: February, 1990.

### References

Ziegler, R. L. 1988. Stream resource utilization of sympatric and allopatric juvenile brown (*Salmo trutta*) and steelhead trout (*Salmo gairdneri*). Michigan Department of Natural Resources, Fisheries Research Report 1957, Ann Arbor.

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**Table 1.**-Species, relative abundance, and length of fishes collected by backpack electrofishing at three stations on Brandywine Creek, September 21, 1989.

Common Name	Number	Percent	Length range (inch group)
Brown trout	139	50.9	3.0-16.0
Mottled sculpin	103	37.7	1.0-3.0
White sucker	28	10.2	2.0-18.0
Grass pickerel	1	0.4	4.0
Pumpkinseed	1	0.4	3.0
Chestnut lamprey	1	0.4	6.0
Total	273	100.0	

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**Web Author:** [Tina M. Tinchert, Librarian](#)

**Questions, comments and suggestions are always welcome! Send them to**  
[tinchert@michigan.gov](mailto:tinchert@michigan.gov)