

LOVE CREEK

Berrien County (T6S, R17W, Sections 9, 16, 17, 7)

Surveyed September 1997

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Environment

Love Creek is a very small first-order tributary to the St. Joseph River. A designated trout stream that has a water quality designation of top-quality cold, Love Creek enters the St. Joseph River downstream of Berrien Springs Dam. The town of Berrien Springs is only about 2 miles from the middle section of the creek.

The upper half of Love Creek flows through a very steep wooded gully. There, glacial out-wash soils are composed mainly of clay and sand (termed udorthents and udipsamments) and have a very rapid rate of surface runoff. The lower half of the stream is in nearly level sods composed of Houghton muck, which have a much lower rate of surface runoff.

Estimated to be 3.1 miles long, Love Creek originates in a swamp, and falls more than 130 feet to its confluence. Only the lower mile of stream is stocked by the DNR because the upper half is intermittent. In the lower area, the stream averages 5 feet wide and 6 inches deep. Habitat components include riffles, pools, undercut banks, grasses, shrubs, and overhanging brush. These are rated as common to abundant throughout the system.

Bottom substrates in the surveyed area (Deans Hill Road) consisted of 90% sand, 10% gravel, and a trace of silt. A water quality survey (Creal 1989) revealed typical concentrations of heavy metals and nutrients for Michigan streams. That survey was conducted to assess impacts of the now-closed Tri-Township Landfill (open dump). Water chemistry data did not reveal any contamination from the landfill, although some DNR Waste Management officials believe that contamination will eventually occur because the dump exists in sand and has no clay liner.

Nine taxa of benthic macroinvertebrates were recorded in the Deans Hill Road area in 1989. Only scuds (Amphipoda) were abundant. Snails, mayflies, aquatic beetles, and midges were all rated as scarce due to bottom habitat constraints. While aquatic organisms were deemed sparse, salmonids found in Love Creek are consistently fat and in excellent condition. These are some of the healthiest trout we have ever encountered.

Relatively little development has occurred in the Love Creek watershed. Some active hay fields and woods border the lower half. The upper half is mostly wooded with an occasional residential site, and there is a small hospital near the creek. No State-owned lands occur along the creek, but the Love Creek Nature Center owns a substantial amount of frontage. Landowners allow access if permission is requested.

Fishery Resource

Love Creek has been managed for trout since at least 1933. Brook trout were stocked in 1933-1938, and 1979 through the present. While not a large stream, it does have its faithful anglers who spend time in pursuit of brook and brown trout.

The earliest fish survey on file for Love Creek was conducted in 1969. This survey (and all others afterwards) used a 110-V DC backpack electroshocker. At that time, an excellent brown trout

population was found (CPE 71/hour). In addition to brown trout, a few creek chubs, green sunfish, central mudminnows, and white suckers were found.

The last full survey of Love Creek was conducted in 1990 (Dexter 1992). The fish community at that time was not much different from that in the 1969 survey. As most surveys on Love Creek have shown, reproduction of several salmonid species is fair to good considering the limited spawning areas. Central mudminnows have always been numerous, but most other species have been sparse. Dexter (1992) includes a complete listing of all species of fish sampled in Love Creek in past surveys.

During the regular trout fishing season, four species of salmonids have been available to anglers, including brook, brown and rainbow trout, and chinook salmon. Steelhead spawn very successfully in Love Creek, and their offspring always make up a significant portion of the stream's fish biomass. In spring especially, and sometimes in summer, steelhead run Love Creek and provide some angling opportunity, although mostly they are targets for poachers.

The most recent work on Love Creek, conducted 4 September 1996, estimated the number of trout present as well as other population characteristics. The sample was taken at Dean Hills Road, where almost all other samples have been obtained. Survey results ([Table 2](#)) were that species composition appeared to be unchanged from the 1990 survey (species other than trout were not actually counted).

No brook trout were collected in the 585-foot survey section even though this area is routinely stocked. Naturally produced brown trout were few in number. Using the Zippin depletion method (3 pass), the brown trout population was estimated at only 30 fish per acre (1.0 pounds per acre). These fish were all age 0, and were all 4 inches long ([Tables 2 and 3](#)).

Naturally produced rainbow trout (steelhead) were the only other salmonid species collected. The rainbow trout population was estimated at 295 fish per acre (34 pounds per acre). Rainbow trout ranged from 4 to 8 inches in length ([Table 2](#)). Only the 4-inch rainbows were age 0; all others were age 1 ([Table 3](#)).

Catch-per-unit effort for each of the salmonid species present in Love Creek has been extremely variable since 1969 ([Table 1](#)). Some general conclusions can be drawn from this data. Brown trout abundance appears to have been severely reduced since anadromous runs of salmon and steelhead started. Brook trout abundance (and fishing success) was high in the initial years of the stocking program, but have since declined substantially. In the early stocking years, local anglers reported several brook trout in the 15-20" range. Rainbow trout are holding their own.

Further information can be gained from recent temperature monitoring. In 1998, using a continuous recording thermometer, the mean July temperature was 55.60F. Wehrly et al. (1998) have used mean July temperature data to predict trout biomass in streams across Michigan. Using this information it appears that this stream is colder than most brook trout streams in the State of Michigan, and much colder than most brown trout streams. The maximum recorded temperature in 1998 was 60F.

Research studies in recent years have implied anadromous salmonids compete with resident salmonids (Fausch 1981, 1986; Zeigler 1988). Anadromous runs up the St. Joseph River and into Love Creek may be inhibiting the brook and brown trout fishery. Current research at the Hunt Creek Fisheries Research Station is trying to determine the actual effects through a long-term study of the interactions of steelhead and brown trout. Seelbach (1991) found through a continuing creel census of the St. Joseph River fishery that an insignificant percentage (less than 5%) of the steelhead caught are wild fish.

The Division tries to promote wild fish over stocked fish. This has to be considered in the overall

management of Love Creek, as it does produce healthy wild smolts. With roughly 2 acres of water available for rearing smolts, Love Creek could produce in excess of 500 yearling steelhead (based on the 1995 estimate). This information has to be considered in the management of Love Creek.

Many small tributaries to the St. Joseph River in Berrien County are similar to Love Creek in both water quality and species composition. However, Love Creek has been known to produce more good fishing than most local tributaries of similar size. Love Creek continues to provide some fishing, although in a diminished capacity to that of 10 years ago.

Management Direction

Love Creek should continue to be managed as a top-quality, coldwater, designated trout stream. Natural reproduction of at least three salmonid species is present. The seasonal salmonid species may have significantly reduced both brook and brown trout populations.

Yearling brook trout stockings (800-1,100 per year) seem to provide little fishing. All surveys since 1981 have counted only a few brook trout. Angler reports were good through the 1980s, and then diminished considerably. This stream was only one of three being stocked in the Lower Peninsula. The poor survival and high cost of transporting fish all the way from the Marquette State Fish Hatchery led to the decision to cease all stocking efforts beginning in 1997.

An obstacle to maintaining or improving the present fishery is the continued sand input after heavy rains. As sand is an inherent material in the moraine, there is nothing that we can do to stop this input. Large rain events in the past prompted numerous surveys of the creek to investigate potential damage. Large amounts of sand would enter the creek and fill valuable habitats. Subsequent evaluations documented that these valuable habitats (pools primarily) would be cleansed of sand rather quickly.

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References

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(*Salmo trutta*) and steelhead trout (*Salmo gairdneri*). Michigan Department of Natural Resources, Fisheries Research Report 1957, Ann Arbor.

Table 1.-Catch per hour, using backpack electrofishing gear, of four species of salmonids from the Deans Hill Road station at Love Creek, 1969-1990. N/P = Not present because not stocked.

Year	Brown trout	Brook trout	Rainbow trout	Coho salmon
1969	72.0	N/P	0	N/P
1971	42.0	N/P	110.0	28.0
1972	20.0	N/P	26.0	0
1978	0	N/P	0	4.0
1980	1.1	20.9	37.4	1.0
1981	0	5.5	39.6	58.0
1987	0	0	38.2	N/P
1989	16.9	0.8	13.8	N/P
1990	1.0	2.0	58.0	N/P
1996	4.0	0	38.0	N/P

Table 2.-Number, weight, and length (inches) trout collected from Love Creek by backpack electroshocking, September 1997.

Species	Number	Percent by number	Weight (pound)	Percent by weight	Length range (inches)	Percent legal size
Brown trout	2	9.5	0.1	2.8	4-4	0
Rainbow trout	19	90.5	2.1	97.2	4-8	11

Table 3.-Average weighted total length in inches at age, and growth relative to the state average, for trout sampled from Love Creek with backpack shocking, September 1997. Number of fish aged is given in parentheses.

Species	Age						Mean growth index
	0	1	2	3	4	5	
Brown trout	4.4 (3)	-	-	-	-	-	-
Rainbow trout	4.3 (3)	7.0 (25)	-	-	-	-	1.3

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