



Penoyer Creek 2021 Fisheries Survey Report  
Muskegon River watershed  
Newaygo County, MI  
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### Introduction

Penoyer Creek is in the western Lower Peninsula of Michigan and is in the Muskegon River watershed, just north of the City of Newaygo in Brooks Township of Newaygo County. Penoyer Creek is approximately 5 miles in length and originates from the combined outflows of Pickerel and Emerald Lakes. From there, Penoyer Creek flows east and goes under M-37. After that, it flows generally southeast for several miles before turning southwest for its remaining course. It then crosses back under M-37 and then M-82 before flowing into the Muskegon River. Land ownership along Penoyer Creek is mostly private, although it does flow through several parcels of Manistee National Forest land and one state-owned parcel. Land use in the Penoyer Creek watershed is almost entirely forested, with very little development. The primary landcover is northern hardwoods, with some conifers mixed in as well, particularly along the stream corridor. Over its 5-mile course, Penoyer Creek drops approximately 120 feet, for a gradient of approximately 24 ft/mi.

Dams are prominent features in the Penoyer Creek watershed. Penoyer Creek begins by flowing over the dam that controls the lake levels of Pickerel and Emerald Lakes. Proceeding downstream, just upstream of the lower M-37 crossing, there are two consecutive privately-owned dams (the uppermost of which is partially failed). Shortly downstream from there, another dam is located under M-82. Finally, Penoyer Creek then flows through an old derelict furniture factory (essentially another dam) before finally joining the Muskegon River. In the short distance between M-82 and the Muskegon River, there is at least 30 feet of elevation change. In terms of fish passage, Penoyer Creek is entirely cut off from the Muskegon River. The outflow from the furniture factory is a pipe that is perched 5 feet or so above the Muskegon River.

The only fish species ever recorded as being stocked into Penoyer Creek was Brook Trout. Penoyer Creek was historically stocked with Brook Trout in the late 1800s and early 1900s. It was first stocked in 1880 with fry. It was again stocked with Brook Trout in 1889, 1895, 1898, 1909, and 1901. Records between then and 1934 are unavailable, but Brook Trout were also stocked into Penoyer Creek (and occasionally "Penoyer Pond") between 1934 and 1944. No stockings have been recorded for Penoyer Creek since then. It is possible or even likely that Arctic Grayling once inhabited Penoyer Creek, although that species was extirpated from the lower peninsula of Michigan by around 1900.

Penoyer Creek is a Designated Trout Stream and is managed under Type 1 regulations, meaning that it is open to fishing from the last Saturday in April through September 30. The minimum size limits are 7" for Brook Trout, 8" for Brown Trout, and 10" for Rainbow Trout. No more than three trout over 15 inches may be kept.

### Historical Fisheries Surveys

Penoyer Creek has been surveyed several times in the past, all by backpack electrofishing. The first survey was conducted in 1967 on US Forest Service land off Basswood Drive by the Michigan Department of Conservation (MDOC; the precursor to the MDNR of today). In that survey, 23 Brook Trout were caught, ranging from 4.1 to 6.5 inches in length. Other species caught included Creek Chubs, Blacknose Dace, and White Sucker. Another survey was conducted by MDOC in the same vicinity in 1969. In that survey, two Brook Trout were caught, one in the 5-inch class and the other in the 6-inch class. Other species caught included Bluegill, Blacknose Dace, and White Sucker.



Another, more comprehensive survey was conducted in 1986 by MDNR. In that survey, six different locations throughout the subwatershed were surveyed. Fish species caught included Bluegill, Brook Trout, Bullhead, Central Mudminnow, Creek Chub, Grass Pickerel, Longnose Dace, Mottled Sculpin, Northern Pike, Pumpkinseed, and Rock Bass. Brook Trout were only present in the lower half of the stream.

### Methods

The most recent MDNR Fisheries Division survey of Penoyer Creek was conducted on September 15, 2021. Sampling was conducted using one Wisconsin battery-powered 12-volt backpack shocker with one probe. Three locations on Penoyer Creek were surveyed.

### Results

The lowest station surveyed in 2021 began at the dam directly underneath M-82 (also known as Curve St. or Fremont St.). Fish caught here included Blacknose Dace, Brook Trout (79 from 2 to 9 inches), Creek Chubs, and Sculpin (Table 1). The station was approximately 500 feet in length, averaged 25 feet wide and one foot deep, with the maximum depth being 2 feet. Substrates were 50% sand, 47% silt, and 3% gravel. The stream channel morphology consisted of 95% run and 5% pool. In this area, the stream flows right next to the railroad grade and was obviously straightened when the grade was constructed. The stream is clearly impounded by the dam under M-82. Yet another privately owned dam is present just upstream of M-37, not far from the upper end of this station. At 10:15 am, the water temperature was 55.2F while the air temperature was 62.2F.

The next station was located just upstream of the dam located on Resurrection Life church property, approximately ¼ mile upstream from M-37. This station was 50 feet in length, beginning at the dam (which is partially failed) and proceeding upstream from there. Fish caught in this station included Blacknose Dace, Brook Trout (16 from 3 to 7 inches in length), Creek Chub, and Sculpins (Table 2). The station averaged 15 feet wide and 6 inches deep, with the maximum depth being 1.5 feet. Substrates were 81% sand, 10% silt, 3% gravel, 3% cobble, and 3% boulder. The stream channel morphology consisted of 90% run and 10% pool. This reach is clearly impounded to some degree by the dam, which still has several boards in that impound water. The only cover present was streamside grassy vegetation. At 12:45 am, the stream temperature was 57.9F, while the air temperature was 75.0F.

The furthest upstream station on Penoyer Creek was off Basswood Road near the Section 8/17 line. Fish caught at this station consisted of Brook Trout (only one, at 4 inches), Blacknose Dace, Creek Chub, and Yellow Bullhead (Table 3). This station was 300 feet in length, averaged 8 feet wide and 6 inches deep, with the maximum depth being 2 feet. Substrates were 45% gravel, 30% sand, 20% cobble, 3% silt, and 2% clay. The stream channel morphology consisted of 70% run, 20% riffle, and 10% pool. In this area, the stream flowed through a deep valley with a closed-canopy forest, with mature white pine, cedar, and northern hardwoods being the primary riparian cover types. Fish cover was present in the form of instream woody debris, undercut banks and log jams. At 2:17 pm, the stream temperature was 69.9F, while the air temperature was 75.3F.

### Discussion

The 2021 fisheries survey showed that the lower half of Penoyer Creek continues to support coldwater species like Brook Trout. While the stream starts out as the warm outflow of Pickerel and Emerald Lakes, it accrues groundwater and cools quickly as it proceeds downstream. However, the stream is heavily impacted by four different dams and a derelict furniture factory, which blocks all potential fish passage into Penoyer Creek from the Muskegon River. If fish passage were restored, Penoyer Creek would no



doubt support self-sustaining populations of Rainbow Trout (steelhead), Coho Salmon, and Brown Trout, in addition to the Brook Trout that are already there.

Recommendations

Removal of the three lower dams and the derelict furniture factory on Penoyer Creek would greatly improve the quality and connectivity of the subwatershed. All three are in private ownership, so they cannot be removed without willing landowners. While removal of the two dams just upstream of M-37 would be relatively straightforward, removal of the furniture factory and the lower dam will present a unique engineering challenge. Obstacles would include the M-82 bridge pillars, the railroad grade, and at least 30 feet of gradient in a very short distance. Regardless, removal of the dams and the furniture factory, restoring fish passage, and restoring the Penoyer Creek channel should be a high priority.

Due to the high quality of the Penoyer subwatershed, it should be protected from unwise development practices and increased impervious surfaces. Any human development should take place well away from the stream, with the riparian zone protected and left intact. Following these recommendations will provide resistance to the effects of climate change and protect cold water fish species that reside in Penoyer Creek.

Table 1. Number of fish caught per inch group in a September 15, 2021, electrofishing survey of the Penoyer Creek, Newaygo County, MI. The station was approximately 500 feet in length and ran from the dam under M-82 upstream to M-37.

Species	Inch class									Total:
	1	2	3	4	5	6	7	9		
Blacknose Dace	9	2	1							12
Brook Trout		3	26	15	2	4	5	1		56
Creek Chub		1								1
Sculpin spp.	7	20	11	1						39
										108



Table 2. Number of fish caught per inch group in a September 15, 2021, electrofishing survey of Penoyer Creek, Newaygo County, MI. The station was 50 feet in length. The station began at the dam on Resurrection Life Church property and ran upstream from there.

Species	Inch class							Total:
	1	2	3	4	5	6	7	
Blacknose Dace	5	47						52
Brook Trout			8	4		2	2	16
Creek Chub	1	4						7
Sculpin spp.		3						3
								78

Table 3. Number of fish caught per inch group in a September 15, 2021, electrofishing survey of Penoyer Creek, Newaygo County, MI. The station was approximately 300 feet in length and was accessed off Basswood Lane in the northeast corner of Section 17.

Species	Inch class								Total:
	1	2	3	4	5	6	7	8	
Blacknose Dace	5	3	6						14
Brook Trout				1					1
Creek Chub	11	21	2	2	1	2	1	1	41
Yellow Bullhead								1	1
									57