

Mitchell Creek
Grand Traverse County
August 2012

Heather L. Hettinger, Fisheries Biologist, Traverse City

Environment

Mitchell Creek is a tributary to Lake Michigan located in Grand Traverse County, in the northwest lower peninsula of Michigan. Mitchell Creek originates in East Bay Township adjacent to the Boardman River, and is joined by numerous small tributaries as it flows through East Bay and Garfield Townships and into East Grand Traverse Bay of Lake Michigan (Figure 1). Tributaries of Mitchell Creek include Vanderlip Creek, Four-Mile Creek, Black Creek, Mitchell Creek 1, and Mitchell Creek 2. The watershed of Mitchell Creek encompasses 15.7 square miles (U'Ren 2003) of land that include two golf courses, large tracts of agricultural lands, airport property, and both commercial and residential land. The mouth of Mitchell Creek is un-armored as it enters Lake Michigan at the beach area of Traverse City State Park. Mitchell Creek is a popular local fishery that receives steelhead and sucker spawning migrations in the spring, and coho and Chinook salmon migrations in the fall. Anglers catch salmon in September before the stream closes on the 30th, and also catch steelhead after the opener on the last Saturday in April each year. Additionally, wading and boat anglers fish just off the mouth of Mitchell Creek in East Grand Traverse Bay. In the fall they target Chinook and coho salmon, and in the spring they target steelhead.

Mitchell Creek generally has a sand and silt bottom, with some areas of gravel. Moderate amounts of woody debris can be found in certain locations, and many sections of stream lack shade and vegetation. The creek flows through a mix of conifers and hardwoods, agricultural lands/open fields, lowland scrub, the outskirts of an industrial park, and finally a moderately developed residential area before entering East Bay. Part of this area includes the Mitchell Creek Nature Preserve, a 128-acre tract of preserved land that the public can access off of Townline Road, and the Reffitt Nature Preserve, a 87-acre tract of preserved land that the public can access off of Four Mile Road (Grand Traverse Regional Land Conservancy 2012).

History

Fish Stocking

Stocking first occurred on Mitchell Creek in 1949 when 2,000 fingerling brook trout were stocked. Another 15,000 fingerling brook trout were stocked in 1952. From 1956 to 1960 Mitchell Creek was stocked with 200 legal-sized rainbow trout every month (April thru August) in order to create a fishing opportunities for children. All of these stockings were discontinued due to the determination that the natural reproduction was enough to sustain the fishery. The final stocking of Mitchell Creek occurred in 1967 when 96 adult coho salmon were stocked.

Fish Sampling

Mitchell Creek has been sampled a few times by MDNR (Michigan Department of Natural Resources) Fisheries Division over the past century. The first known survey of Mitchell Creek took place in September of 1923, when Mitchell Creek was sampled with a 4' x 20' seine in two locations. The first

location was from the US-31 Bridge to the mouth of Mitchell Creek, where the water temperature was 57.2°F and the crew collected white suckers, longnose dace, sand shiners, bluntnose minnows, Johnny darters, and sculpin (referred to as "muddlers"). The second location is not specifically identified, though it is further upstream in Garfield Township. At this site the water temperature was 55.4°F and the crew collected brook trout, rainbow trout, mudminnows, sculpin, and brook sticklebacks.

In October 1957, a section of Mitchell Creek in section 24 of Garfield Township was sampled. At this time there were brook trout, brown trout, and rainbow trout present, the average stream width was 10 feet, and fishing was considered to be good for both rainbow and brown trout.

The Mitchell Creek watershed was not sampled again until May 1966 when two locations on Mitchell Creek and five tributary streams were sampled with a backpack electroshocking unit. The first segment on Mitchell Creek that was sampled was in section 7 of East Bay Township near the mouth. The water temperature was 58°F, and brook trout, rainbow trout, brown trout, central mudminnows, and slimy sculpin were collected. The second segment on Mitchell Creek was in section 25 of Garfield Township, starting at Hammond Road and proceeding upstream 100 feet. The water temperature here was 50°F, and brook trout, rainbow trout, brown trout, and slimy sculpin were collected. A tributary in section 23 of Garfield Township was sampled near Garfield Road, where brook trout, central mudminnows, and blacknose dace were collected. A second tributary in section 24 of Garfield Township was also sampled, but biologists were unable to collect any fish. Water temperature at this location was 63°F. Vanderlip Creek was shocked in section 29 of East Bay Township, where only blacknose dace were collected and the water temperature was 60°F. Black Creek was shocked in section 30 of East Bay Township; biologists were unable to detect any fish and the water temperature at this site was 55°F. Mitchell Creek 2 was sampled in section 30 of East Bay Township, and the creek had a water temperature of 56°F downstream of the golf course. No fish were collected at this site.

Three locations on the mainstem of Mitchell Creek were electrofished in May 1968. The first segment was in section 7 of East Bay Township and included portions of the creek from 300 feet below 3 Mile Road to 100 feet upstream. Brook trout, brown trout, rainbow trout, white suckers, creek chub, and brook stickleback were collected. Twenty-nine percent (29%) of the rainbow trout (60), 67% of the brook trout (40), and 90% of the brown trout (10) collected were of legal size. The second station electrofished began 200 feet down stream of the railroad tracks at Parsons Road and ended at the railroad bridge in sections 7 and 18 of East Bay Township. Brook trout, brown trout, rainbow trout, white suckers, creek chub, horny head chub, blacknose dace, and mottled sculpin were collected. Very few fish were collected at this location, but one notable fish was a 16.8 inch lake-run brown trout. The third segment electrofished was in section 18 of East Bay Township, 50 feet downstream and 75 feet upstream of the southernmost 3 Mile Road crossing, near Airport Road. Brown trout, rainbow trout, green sunfish, juvenile coho salmon, central mudminnows, mottled sculpin, and brook stickleback were collected. No legal size trout or salmon were collected.

In July 2003, Black Creek and Mitchell Creek 1 were sampled on private property in East Bay Township, section 19 using a backpack electrofishing unit, following the Status & Trends protocol (Wills et al. 2008). Two five-spine sticklebacks were collected in Black Creek, and three brown trout, two brook trout, and three creek chub were collected in Mitchell Creek 1. An unnamed Mitchell Creek tributary on the same property was also shocked in August 2003; however no fish were collected at this location.

Environment

This creek has faced environmental challenges for many years. At least five dams have been known to be developed on Mitchell Creek or its tributaries, with the earliest being constructed in 1852. In the early 1960's, Fisheries Division records mention at least three fish kills that were caused by the Parson's Corporation directly releasing chlorine into Mitchell Creek. The Parson's Corporation, who produced components for the aeronautics industry, later reached an agreement with the State where they were permitted to discharge waste water from their metal cleaning operations into Mitchell Creek and did so until the company was sold in the mid 1980's. In 2003 as much as 1,000 feet of Mitchell Creek 1, Mitchell Creek 2, and Black Creek were dredged, filled, and obstructed illegally by a property owner. The property owner was fined by the County and the State and required to repair and pay mitigation for the damages incurred.

At some point in time the creek was diverted from its natural channel to where it flows now. The original path of Mitchell Creek crossed Four Mile Road flowing east, then veered back to the south before making a large sweeping arch to the north/north west. The current path of Mitchell Creek crosses Four Mile Road then runs northwest, predominately parallel to Four Mile Road. The two stream channels merge near the northernmost Four Mile Road crossing and then cross under US-31 before discharging into East Grand Traverse Bay. The remnant stream channel was inspected during a site visit with the Grand Traverse Regional Land Conservancy in the summer of 2011. Historically this channel has had some water flowing through most of its length; however during the recent period of lower than normal water levels much of the stream is now dry. Some sections of the streambed found within the Reffitt Nature Preserve have groundwater pools, while other areas have developed small wetlands. The Grand Traverse Regional Land Conservancy has been looking into ways to divert water back to the original channel; however with the current low water levels this could be detrimental to the system as a whole.

Fishing Regulations

Mitchell Creek is regulated as a Type 1 stream, open to all tackle types. The daily possession for Type 1 streams is five fish, with an 8 inch minimum size limit (msl) for brown and brook trout and a 10 inch msl for rainbow trout, coho and Chinook salmon.

Current Status

On August 8, 2012 Mitchell Creek was shocked with a backpack electrofishing unit. Conducted as a discretionary survey, the goal of this study was to collect fisheries information from a location that had not been surveyed in many years. One location on Mitchell Creek was shocked; 200 feet of stream from an old foot bridge to the culvert at the Traverse Area Recreational Trail (TART Trail) near the intersection of Parsons Road and Four Mile. The culvert at this trail-stream crossing is very close to becoming perched with the low water levels we are experiencing. Water temperature at the sampling site was 57.3°F. A total of 120 fish were collected at this site and included 60 brown trout, 13 rainbow trout, 10 brook trout, 27 sculpin, four coho salmon, three bluegill, one creek chub, one green sunfish, and one central mudminnow (Table 1).

Analysis and Discussion

Mitchell Creek has been sampled at this location at least three times in the past 50 years. Throughout this time frame, the species composition found near the mouth of Mitchell Creek has not varied significantly. All three trout species (brown, brook, and rainbow/steelhead) are still present at this location and several coolwater species are found in low densities. Two species of salmon (coho and Chinook) are also present. The migratory salmonids supported not only provide a fishery in the creek itself, but they also help support a salmon fishery in East Bay. The percentages of legal-sized resident trout may have declined over the years, but this may be partially attributed to changes in the minimum size limit regulations. Water temperatures have remained fairly constant over time which helps explain the consistent natural reproduction of trout and salmon over many decades. Mitchell Creek has faced many environmental challenges over the years, particularly in the upper half of the watershed. While the lower portion of the watershed appears to be in decent condition, as evident by its populations of trout and anadromous fish runs, critical components such as overhanging cover and existing gravel sediments that support natural reproduction need to be protected. Mitchell Creek remains a valuable tributary to East Grand Traverse Bay, and it is critical to continue to monitor the development and land use within the entire watershed.

Management Direction

Since Mitchell Creek is a naturally reproducing trout and salmon stream, it should be protected from uncontrolled development and poor land-use practices by working with MDEQ Water Resources Division to evaluate permit applications. Additionally, there are multiple culverts and road crossings on Mitchell Creek that are restricting fish movement and are potentially causing a disruption of the thermal regime on Mitchell Creek. Opportunities to collaborate with the Grand Traverse County Road Commission, the Grand Traverse Conservation District, the Grand Traverse Band of Indians, and the Grand Traverse Regional Land Conservancy should be explored to remove and replace these problematic culverts. One such crossing that should be replaced is the TART Trail concrete culvert near Parsons Road. The original stream channel of Mitchell Creek that flows through the Reffitt Nature Preserve and behind Traverse City State Park has created a unique wetland complex that should be protected. Fisheries Division does not recommend diverting water back into the original stream channel at this time, as this could be detrimental to fish passage and the natural reproduction of anadromous trout and salmon. Mitchell Creek has been degraded by development throughout its length, and the lack of shade and vegetation along some banks of the creek has severely impacted the thermal regime and potentially the trout populations of the creek. Forming partnerships with riparian property owners, the Grand Traverse Regional Land Conservancy, and the Grand Traverse Conservations district will allow us to develop habitat protection and rehabilitation projects throughout the watershed.

References

- Grand Traverse Regional Land Conservancy [2013]. Mitchell Creek Nature Preserve. <http://www.gtrlc.org/preserve/mitchell-creek-nature-preserve>. [January 24, 2013].
- U'Ren, Sarah. 2003. Grand Traverse Bay Watershed Protection Plan. The Watershed Center Grand Traverse Bay. Traverse City, Michigan.

Wills, Todd C., T. G. Zorn, A. J. Nuhfer, and D. M. Infante. 2008 Draft. Stream Status and Trends Program sampling protocols. Chapter 26 in Manual of fisheries survey methods. Michigan Department of Natural Resources, Fisheries internal document, Ann Arbor.

Figure 1. Mitchell Creek and its tributaries, Grand Traverse County.

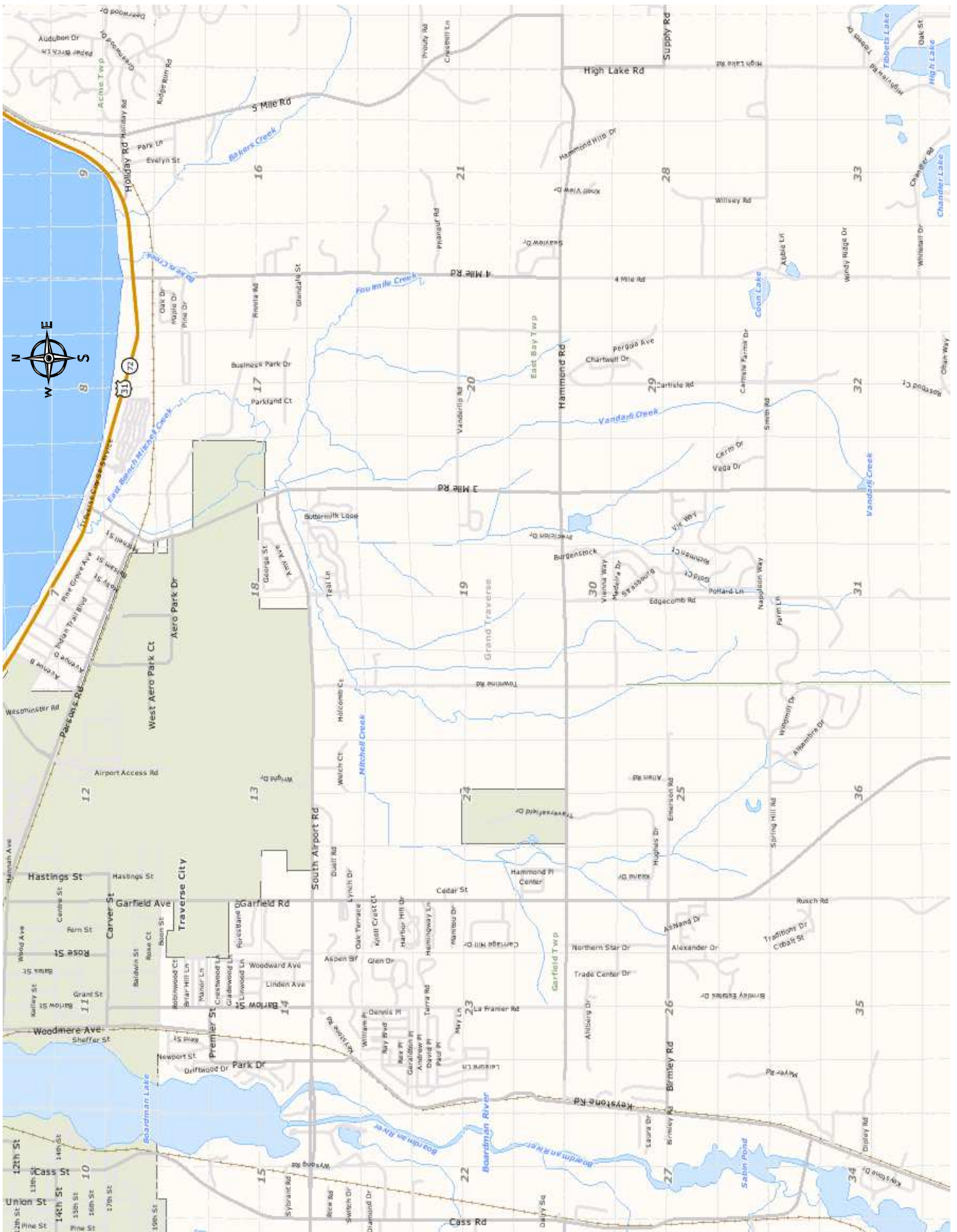


Table 1. Number, weight, and length of fish collected from Mitchell Creek with backpack electrofishing gear in August 2012.

| Species | Number | Percent by number | Weight (lbs) | Percent by weight | Ave. Length (inches) | Length range (in.) | Percent Legal |
|-------------------|--------|----------------------|-----------------|----------------------|-------------------------|-----------------------|------------------|
| Brook trout | 10 | 8.3 | 1.6 | 12.00% | 7.5 | 5-10 | 20% |
| Bluegill | 3 | 2.5 | 0.1 | 0.40% | 3.2 | 2-3 | 0% |
| Brown trout | 60 | 50 | 10.7 | 78.30% | 7.5 | 4-15 | 28% |
| Coho salmon | 4 | 3.3 | 0 | 0.20% | 3.5 | 3-3 | 0% |
| Creek chub | 1 | 0.8 | 0 | 0.10% | 3.5 | 3-3 | 100% |
| Green sunfish | 1 | 0.8 | 0.2 | 1.50% | 6.5 | 6-6 | 100% |
| Central mudminnow | 1 | 0.8 | 0 | 0.10% | 2.5 | 2-2 | 100% |
| Rainbow trout | 13 | 10.8 | 0.6 | 4.50% | 4.7 | 1-7 | 0% |
| Sculpins | 27 | 22.5 | 0.4 | 2.80% | 2.9 | 2-4 | 100% |
| Total | 120 | 100 | 13.6 | 100% | | | |