

Spalding Creek
Wexford County

Pine River subwatershed, Manistee River watershed

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Environment

Spalding Creek is a small, fourth order tributary in the Pine River subwatershed of the Manistee River in southeastern Wexford County, Michigan. The stream begins just south of M-55 in Section 16 of Cherry Grove Township (Figure 1) and flows southeast for approximately 5 miles through a mix of private and federally-owned land. It is fed by several smaller unnamed spring-fed tributaries throughout its entire course. The Spalding Creek watershed is primarily wooded, with some reaches of the stream flowing through coniferous wetlands. The federal land in the subwatershed is managed by the U. S. Forest Service (USFS) as part of the Manistee National Forest. Spalding Creek is a designated Natural River (Anonymous 2003) from the 46 Road crossing downstream to its confluence with the North Branch of the Pine River.

Spalding Creek is a Designated Trout Stream (Michigan Department of Natural Resources [DNR] Fisheries Order 210), and is classified as a Top Quality Trout Feeder Stream (Anonymous 2000). The creek and its tributaries are regulated as Type-1 trout streams, which means that they are open to fishing from the last Saturday in April through September 30 of each year. The minimum size limits are 8 inches for brown trout, 7 inches for brook trout (as of April 1, 2011), and 10" for rainbow trout. A total of five trout per day may be harvested, with no more than three over 15 inches.

History

The first known fish stocking of Spalding Creek occurred in 1947 when brook trout were stocked by the Michigan Department of Conservation (MDOC; the precursor to the DNR). Brook trout were also stocked from 1950-1952, and brown trout were stocked from 1949-1951. The first known fisheries survey of Spalding Creek was conducted on August 12, 1966 by the MDOC. The researchers electroshocked for 15 minutes upstream of 46 Road in Section 16. Brook trout were the only species caught in the survey, with five fish from 3.3 to 6.7 inches recorded. The water temperature on that day was 55°F.

One of the unnamed tributaries to Spalding Creek was dammed in the late 1970s to create a golf course/subdivision pond at what was formerly known as Wedgewood Golf Course (now known as the Briar South Golf Course). The impoundment is sometimes referred to as "Lakewood Lake", and the dam sometimes referred to as the "Norman Smith Dam". The impoundment is approximately 19 acres in size. The dam was inspected in 2002 and received a passing grade (Chenard 2002). The only other known impoundment in the subwatershed is a small 1-2 acre impoundment created by a failing road culvert at the 48 Road crossing of Spalding Creek.

A biological survey of the Spalding Creek watershed was conducted by the Michigan Department of Environmental Quality (DEQ) in August 1990 (Kohlhepp 1997). Three different stations were sampled

for fish in the survey. Two of the stations were on the unnamed tributary that is impounded, and the third station was on the mainstem of Spalding Creek at the 48 ½ Road crossing. The first station on the unnamed tributary was at the Birchwood Lane crossing, immediately upstream of the golf course pond, while the second station was located immediately downstream of the dam outlet. One of the conclusions of the 1990 DEQ survey was that the unnamed tributary was not meeting its designated use as a coldwater stream at the station right below the dam. Brook trout were captured above the dam at the Birchwood Lane and 48 ½ Road stations, but not downstream of the impoundment. Water temperatures were elevated at this station, and the macroinvertebrate community was rated as "poor" due to the presence of mostly tolerant insect species. In contrast, the macroinvertebrate community at the Birchwood Lane site was rated as "acceptable", with a large number of taxa present including mayflies and caddisflies. In addition to brook trout, other fish species recorded at the three stations included central mudminnow, creek chub, golden shiner, common shiner, fathead minnow, blacknose dace, pearl dace, slimy sculpin, white sucker, pumpkinseed sunfish, largemouth bass, yellow perch, and unidentified juvenile lamprey.

In 1980, the original owner/developer of the golf course pond illegally stocked the impoundment with 300 grass carp (also known as white amur) that were four inches in length. Grass carp are an exotic species that are illegal to possess in Michigan because they can be extremely harmful to the environment. Department of Natural Resources personnel became aware of the presence of the grass carp in 1981 and took enforcement action. The owner was fined and a rotenone treatment was conducted to kill the grass carp (and unfortunately, all of the other fish in the impoundment including largemouth bass, white sucker, creek chubs, brook trout, and yellow perch). At the time, the kill was considered a success. The crew recovered 126 of the stocked grass carp, which averaged 21.4 inches in length and 4 lbs 5oz in weight. The crew estimated the largemouth bass kill at 500-1,000 fish averaging 8 inches in length. Approximately 200 white sucker and 300 creek chubs were also observed. A total of 30 brook trout up to 10 inches in length were also recovered. No enumeration for yellow perch was given in the report (DNR, unpublished data).

In October of 2011, as the impoundment was being drawn down for a dam inspection, it became evident that some extremely large fish were present in the pond. On October 14, 2011 the fish were captured and identified as grass carp. A total of seven grass carp were removed from the pond and disposed of. They ranged in size from approximately 20 lbs up to 68 lbs. Two possibilities exist to explain the recent presence of the grass carp in the pond. The first is that the 1981 rotenone survey was not entirely successful, and a few individuals survived. The second possibility is that the treatment was successful, but grass carp were illegally restocked after the treatment was conducted. Regardless, as of October 18, 2011 the pond was completely drawn down and no grass carp remain. No juvenile grass carp have ever been found in any other surveys throughout the Pine River watershed, so it is highly likely that the stocked grass carp were triploid and therefore sterile.

Current Status

The most recent fisheries survey of the Spalding Creek watershed was conducted by the DNR on July 1, 2011. Sampling was conducted at four different sites, including two sites on the impounded, unnamed tributary that runs through the golf course, and two on the mainstem of Spalding Creek itself. Sampling was conducted with a battery-powered 12-volt backpack shocker with one probe. In

addition, temperature monitoring was conducted at two sites throughout the summer of 2011 with continuously recording thermometers (Table 1).

Site 1 was on the unnamed tributary to Spalding Creek, immediately upstream of the Lakewood Lake impoundment, just downstream of the Birchwood Lane culvert. At this site, the unnamed tributary averages about 5 feet wide and 6 inches deep. There is a large scour hole just downstream of the culvert, and most of the fish from this station were captured from that hole. Substrates here consisted of approximately 85% sand, 10% silt, and 5% gravel. We sampled approximately 100 feet of the stream, up to the Birchwood Lane culvert. A total of six brook trout from 10 to 12 inches in length were caught at this site. Other species captured included largemouth bass, pumpkinseed sunfish, yellow perch, and sculpin (Table 2). The July average temperature at Site 1 was 60.4°F, and the maximum temperature recorded here during the entire summer was 68.0°F (Table 1).

Site 2 was also on the unnamed tributary, just downstream of the Norman Smith Dam outlet. At this site, the stream averaged about 5 feet wide and 9 inches deep. There is a large scour hole immediately downstream of the dam outlet culvert (which is perched by at least one foot), and many of the fish caught at this station came from this hole. Substrates here were similar to those above the impoundment and consisted of approximately 85% sand, 10% silt, and 5% gravel. We sampled approximately 125' of stream immediately downstream of the dam outlet. No trout were captured at this site. Other species caught included blacknose dace, bluegill, brook stickleback, central mudminnow, common shiner, creek chub, fathead minnow, golden shiner, largemouth bass, pumpkinseed sunfish, sculpin, and yellow perch (Table 3). The July average temperature at Site 2 was 74.5°F, and the maximum temperature recorded here during the summer was 78.8°F.

Site 3 was on the mainstem of Spalding Creek, just upstream of where it crosses under 33 Road. At this site, the stream flows through wetlands with heavy tag alder cover and averaged 4.5 feet wide and 6 inches deep. Substrates consisted of approximately 94% sand, 5% silt, and 1% gravel. We sampled approximately 125 feet upstream of the 33 Road culvert. Species caught included blacknose dace, bluegill, brook stickleback, central mudminnow, creek chub, and sculpin (Table 4). No trout were captured. At 10:20 am on July 1, the air temperature was 74°F and the water temperature was 63°F.

Site 4 was also on the mainstem of Spalding Creek, just downstream of the 48 ½ Road crossing. This site is approximately ¼ mile downstream from where the impounded, unnamed tributary joins Spalding Creek and about ½ mile upstream of where Spalding Creek joins the North Branch of the Pine River. At this site Spalding Creek averages about 12 feet wide and 6 inches deep. Substrates consisted of 40% sand, 40% gravel, and 20% silt. There was a fair amount of instream woody cover in addition to tag alders in and near the stream. We sampled approximately 150 feet upstream to the 48 Road crossing. Brook trout were the most numerous species captured, with 15 fish ranging from 2 to 9 inches in length. Other species caught here included blacknose dace, largemouth bass, pumpkinseed sunfish, and sculpin (Table 5). At 11:00 am on July 1, the air temperature was 74°F and the water temperature was 61°F.

Although no other sites were sampled in the July 1 effort, we visually inspected two road crossings (48 Road and 46 Road) on Spalding Creek further upstream from the impounded tributary (Figure 1). At the 48 Road crossing of Spalding Creek, we found a small 1-2 acre impoundment created by a plugged culvert. The concrete culvert appears to be very old, and half of it has fallen off and into the stream.

The remainder of the culvert is perched by approximately two feet. At 11:45 am the air temperature at this location was 74°F and the water temp was 64°F, which is 6°F warmer than the water temperatures upstream at 46 Road (see below). The warming caused by the impounded water may explain why no trout were present further downstream at 33 Road. On 46 Road, there are small several spring creeks that flow south, under 46 Road, to the east of the main 46 Road crossing of Spalding Creek. At 11:35 am the air temperature here was 74°F, and the water temp was 58°F. We observed trout but did not sample.

Analysis and Discussion

Spalding Creek is a high-quality trout stream that supports self-sustaining populations of brook trout. However, the Spalding Creek subwatershed is negatively impacted by the presence of dams. In particular, the Norman Smith Dam causes significant warming of the water downstream of the dam, affecting the fish community and excluding coldwater species such as trout. The 48 Road crossing also acts as a dam, blocking fish passage and warming the water in Spalding Creek.

Management Direction

1. Since Spalding Creek and its tributaries are naturally reproducing trout streams, they should be protected from uncontrolled development and land-use practices by working with MDEQ and evaluating Land and Water permit applications. The Pine River Natural Rivers designation, which includes the mainstem of Spalding Creek, is a form of zoning designed to protect rivers from environmentally harmful development and should help in this respect.
2. The Manistee River Assessment (Rozich 1998) and the Manistee River Management Plan (Rozich 2007) place a high priority on removing old dams that affect water temperature and fish habitat in the Manistee River watershed. In particular, the privately-owned Norman Smith Dam has negative impacts on the unnamed tributary to Spalding Creek and should be removed. The DNR Fisheries Division is willing to help the dam's owner raise the funds to do so.
3. Rozich (1998, 2007) also placed a high priority on rehabilitating road-stream crossings that were negatively affecting fisheries. The 48 Road crossing is among the worst in the Spalding Creek watershed in that it acts as a dam. The concrete culvert is broken and plugged, resulting in an impoundment that completely blocks fish passage and dramatically warms the water. The Wexford County Road Commission should replace the broken concrete culvert with a structure that does not impound water and allows for fish passage.

References

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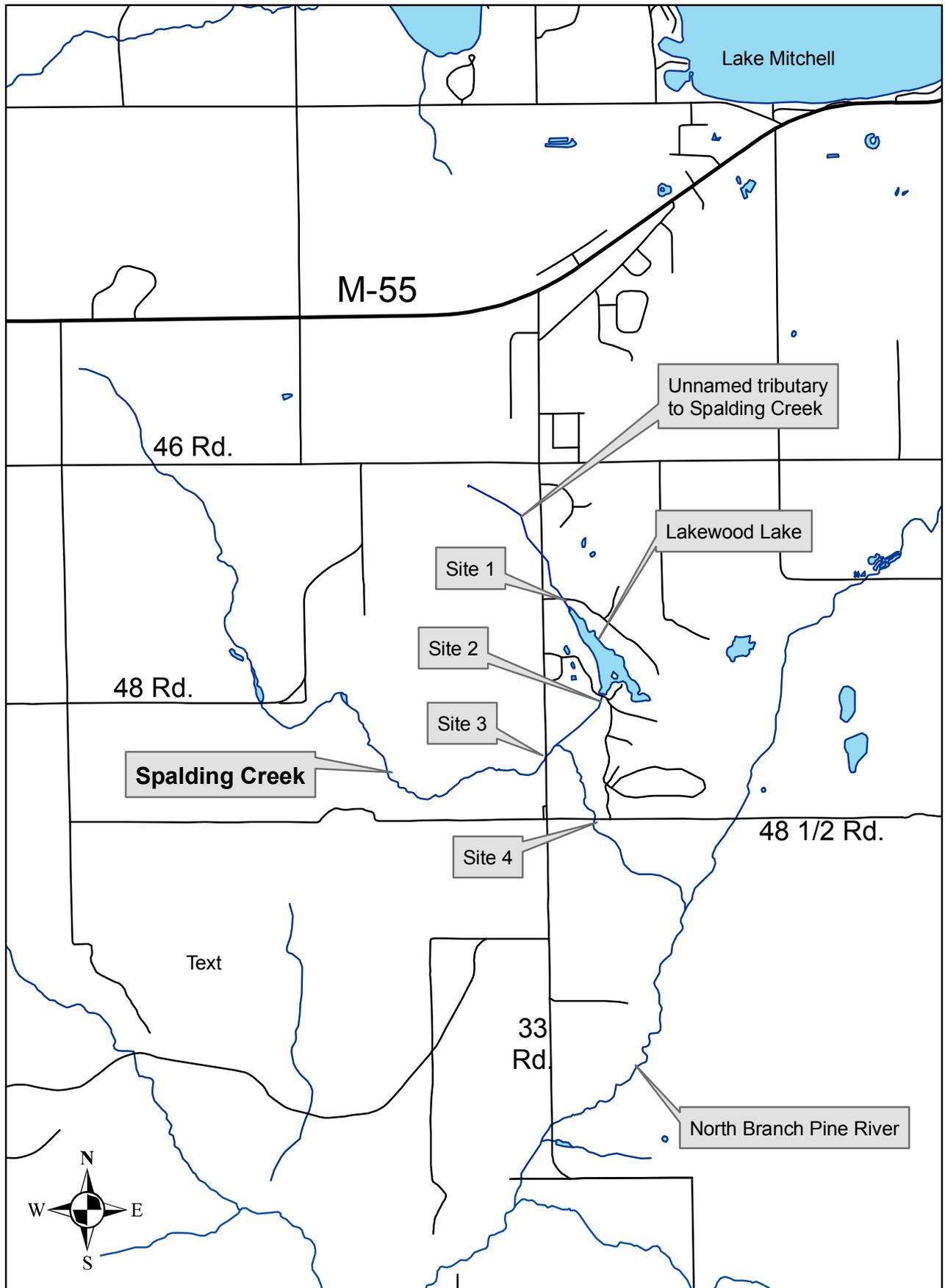


Figure 1. Sample sites from the 2011 DNR survey of the Spalding Creek subwatershed, Wexford County, MI.

Table 1. Temperature data from an unnamed tributary to Spalding Creek in the summer of 2011, both upstream and downstream of Lakewood Lake.

| | Site 1 (Upstream) | Site 2 (Downstream) |
|-----------|-------------------|---------------------|
| June Ave: | 57.4 | 66.7 |
| June Max: | 65.1 | 70.7 |
| June Min: | 50.4 | 61.6 |
| July Ave: | 60.4 | 74.5 |
| July Max: | 68.0 | 78.8 |
| July Min: | 54.1 | 67.5 |
| Aug Ave: | 58.4 | 73.3 |
| Aug Max: | 65.5 | 78.1 |
| Aug Min: | 51.5 | 68.9 |

Table 2. Catch from the 2011 DNR fisheries survey of the Unnamed Tributary to Spalding Creek at the Birchwood Lane crossing, upstream of Lakewood Lake (Site 1).

| Inch Class | Brook trout | Largemouth bass | Pumpkinseed sunfish | Sculpin | Yellow perch |
|------------|-------------|-----------------|---------------------|---------|--------------|
| 1 | | 1 | 1 | | |
| 2 | | | 2 | 4 | 4 |
| 3 | | | 1 | 3 | 5 |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | 2 | | | | |
| 11 | 3 | | | | |
| 12 | 1 | | | | |
| Total: | 6 | 1 | 4 | 7 | 9 |

Table 3. Catch from the 2011 DNR fisheries survey of the Unnamed Tributary to Spalding Creek downstream of the Lakewood Lake (Site 2).

| Inch Class | Blacknose dace | Bluegill | Brook stickleback | Central mudminnow | Creek chub | Common shiner | Fathead minnow |
|------------|----------------|----------|-------------------|-------------------|------------|---------------|----------------|
| 1 | 1 | 1 | 1 | | | | |
| 2 | 2 | 1 | | 9 | 12 | 8 | 5 |
| 3 | | | | 14 | 7 | 4 | |
| 4 | | | | | 4 | | |
| 5 | | | | | 1 | | |
| 6 | | | | | 1 | | |
| Total: | 3 | 2 | 1 | 23 | 25 | 12 | 5 |

| Inch Class | Golden shiner | Largemouth bass | Pumpkinseed sunfish | Sculpin | Yellow perch |
|------------|---------------|-----------------|---------------------|---------|--------------|
| 1 | | | | | |
| 2 | 1 | | 4 | 1 | 1 |
| 3 | 2 | 1 | | 1 | |
| 4 | | | | | 1 |
| 5 | 1 | | | | |
| 6 | | | | | |
| Total: | 4 | 1 | 4 | 2 | 2 |

Table 4. Catch from the 2011 DNR fisheries survey of Spalding Creek at 33 Rd. (Site 3).

| Inch Class | Bluegill | Blacknose dace | Brook stickleback | Creek chub | Central mudminnow | Sculpin |
|------------|----------|----------------|-------------------|------------|-------------------|---------|
| 1 | | 2 | 1 | | | |
| 2 | 1 | 17 | 1 | 11 | 2 | 2 |
| 3 | | 1 | | 3 | | |
| 4 | | 1 | | | | |
| Total: | 1 | 21 | 2 | 14 | 2 | 2 |

Table 5. Catch from the 2011 DNR fisheries survey of Spalding Creek at 48 1/2 Rd. (Site 4).

| Inch Class | Brook trout | Blacknose dace | Largemouth bass | Pumpkinseed sunfish | Sculpin |
|------------|-------------|----------------|-----------------|---------------------|---------|
| 1 | | | | | |
| 2 | 8 | 6 | | 2 | 9 |
| 3 | | | 1 | | 4 |
| 4 | | | | | |
| 5 | 2 | | | | |
| 6 | 2 | | | | |
| 7 | | | | | |
| 8 | 2 | | | | |
| 9 | 1 | | | | |
| Total: | 15 | 6 | 1 | 2 | 13 |