

### **Trout Brook Pond**

Chippewa County, T44N, R04W, Sec. 22  
Last surveyed 2013

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#### **Environment**

Trout Brook Pond is an impoundment of Trout Brook in southwestern Chippewa County, located approximately 10 miles west of the village of Rudyard (Figure 1). Trout Brook is a tributary to Biscuit Creek, within the Pine River watershed. Water levels are controlled by Trout Brook Pond Dam, a 295-foot long earthen embankment with a height of approximately 7 feet. Prior to construction of the dam, a natural pond of approximately two acres existed at this location. The dam was built to improve trout habitat and increase recreational fishing opportunity. The pond is located within the Hiawatha National Forest, and a section of the North Country Hiking Trail is adjacent to the lake.

Trout Brook Pond is fed by spring seeps from the hillside at the south end of the impoundment. Maximum depth is 10 feet in the southeast corner of the lake (Figure 2). The lake bottom is characterized by extensive weed beds of chara (also called muskgrass or skunkweed).

#### **History**

The earliest records of fisheries management for Trout Brook Pond date back to 1956, when the site was evaluated for the potential construction of a dam. The dam was built in 1958, and the waterbody has been managed for brook trout since that time. Fishing was noted to be excellent during 1959 and 1960, with heavy fishing pressure noted in early 1960. The next record is from 1961, and noted considerable use of the access points for the pond, with more than a half dozen boats on the lake at that time.

The pond was annually stocked with brook trout from 1959 until 1994 (Table 1), except for 1974 and 1978. In July 1964, a fish kill on Trout Brook Pond was investigated. Approximately 40 brook trout (8-9 inches) were found. No further mortalities were reported, and it was hypothesized that the dead fish may have been because "someone may have attempted to use dynamite." Trout Brook Pond was next surveyed in 1982, when survival and growth of planted brook trout were noted to be good. Brook trout from 3 to 12 inches were captured during that survey effort. In a 1988 survey, trout from 6 to 12 inches were captured, but numbers were lower than in the 1982 survey. Trout survival was noted to be good, and the recommendation was to continue management as a single species trout lake.

The US Forest Service surveyed the pond in 1994, and found good numbers of brook trout, but none were of legal size. The Forest Service recommended a drawdown and removal of organic sediment from the south end of the pond to increase depth, and the placement of gravel for spawning habitat.

Brook trout from 6 to 11 inches were captured in a 1994 DNR survey. It was noted that only 42 percent of the trout in the survey were of legal size. At the time, angling pressure was noted to be moderate to heavy. The survey report referenced the US Forest Service plans to draw down the pond

and re-contour the bottom and add spawning substrate in 1996. As a result, stocking was discontinued for 1995 and 1996 and was scheduled to resume in 1997 following the work on the pond.

Although the planned work on the pond was not done, it was again surveyed in 1997. A good catch of 7 to 12 inch brook trout was noted, and age data indicated all trout captured were from non-stocked years, and therefore, of wild origin. It was noted that numerous brook trout had been observed spawning over upwelling groundwater at the south end of the lake. The recommendation to cease stocking was made. A subsequent Fisheries Management Prescription (Number 187) was approved and prescribed canceling brook trout stocking in Trout Brook Pond. Poor size structure of the population (due to overabundance) and natural reproduction were cited as reasons for discontinuation of the stocking.

A 2002 survey by the US Forest Service yielded brook trout up to 14 inches in length. The US Forest Service surveyed Trout Brook Pond again in 2008 and found brook trout from 6 to 10 inches in length. The survey report mentioned the plans to dredge the pond and improve spawning habitat, but cited insufficient funding as the reason those plans were not implemented. Abundance (catch per unit effort) was lower than previous surveys, but it was thought that was likely due to the timing of the survey. The report also indicated that plans were still in place to do the habitat work to the pond, and funding may be available in the future.

On March 10, 2013, the Lake Superior State University Fish and Wildlife Club took depth and dissolved oxygen measurements along several profiles (Table 4). This effort was done at the request of the Northern Lake Huron Management Unit to assist with developing a lake depth map and gather some limnological information about the lake. Dissolved oxygen was found to be very low in several parts of the lake. At one location, dissolved oxygen levels dropped to 1.2 ppm (8.5% saturation) three feet below the surface. No fish kills were observed and portions of the water column had good dissolved oxygen concentration in some parts of the lake. The depths and location information were used to generate a lake depth map (Figure 2) with assistance from the staff at the Institute for Fisheries Research.

### **Current Status**

A general netting survey of Trout Brook Pond was conducted from June 4 to June 6, 2013. Total effort consisted of six large mesh fyke net lifts, two small mesh (maxi-mini) fyke net lifts, and two experimental gill net lifts. A total of 392 fish were collected from 7 species (Table 2). Growth was below average for brook trout as they were almost an inch shorter (-0.9) than the statewide average length at age for that species.

A total of 38 brook trout were captured ranging in length from 3-13 inches (Table 3). Four age groups of brook trout were represented (age-0 to age-3). Of the remaining species, blacknose dace were by far the most abundant, comprising 61% of the numerical catch. Black spot was noted as present on many of the dace captured with some individuals heavily infested.

### **Analysis and Discussion**

This is a brook trout managed impoundment supported with natural reproduction. Natural reproduction of brook trout appears to be consistent, with a good distribution of sizes and ages across

four age classes. Spawning habitat appears to be limited to small areas of gravel and groundwater upwelling in the south end of the lake. Despite the limited availability of spawning habitat, additional stocking of brook trout doesn't make sense as the fish are growing slowly. The waterbody also appears to be depth limited with only a few areas of deep (>6 ft) water.

### **Management Direction**

Trout Brook Pond has a self-sustaining brook trout population in an area of the state (the Eastern Upper Peninsula) that does not have many inland lake fishing opportunities. Trout Brook Pond does have some management issues. There are a number of costs associated with maintaining the dam for this waterbody. Although this is classified as a low hazard dam, periodic dam safety inspections are required. Each of these inspections costs approximately \$2,500. When combined with the six other impoundments (and inspections) that the Northern Lake Huron Management Unit is responsible for, this becomes a substantial expense.

Another cost associated with Trout Brook Pond is the maintenance of the control structure (outlet). Water level is controlled by a three feet by five feet concrete drop inlet structure connected to a 36 inch diameter corrugated metal outlet pipe (J. Pawloski, Dam Safety Inspection Report, 2013). The spillway is protected by metal grating, which clogs seasonally with fallen leaves, dying vegetation, and debris placed there by beaver. When the grates become clogged, water level rises and in some cases overtops the earthen embankment (dam), or floods the adjacent section of the North Country Hiking Trail. When this happens, personnel from Northern Lake Huron Management Unit (based in Gaylord) are called to remove the debris, which involves not only staff time, but travel time as well. The Gaylord office is located approximately 110 miles from Trout Brook Pond. At times, it can require cleaning/maintenance every week or two.

The level of fishing pressure on this waterbody is unknown. A Lake Superior State University student will be conducting senior thesis research project on Trout Brook Pond. The project will attempt to quantify recreation use of the pond, so a cost-benefit analysis of the fishery and maintenance of the impoundment can be conducted.

The following management actions are proposed for Trout Brook Pond:

1. Beaver management- encourage trapping of beaver at this location to reduce additional damming of the control structure. If beaver dams occur here during the off-season, seek nuisance control permits for them to be trapped.
2. Creel survey- a survey should be conducted for this waterbody to evaluate its overall use.
3. Habitat improvement- work with US Forest Service to coordinate plans for a drawdown and excavation for deeper water and gravel placement for spawning habitat.
4. Dam removal- if the cost-benefit analysis shows that the angler/recreational use value is less than the cost of maintenance, develop a plan to remove the dam.

### **References**

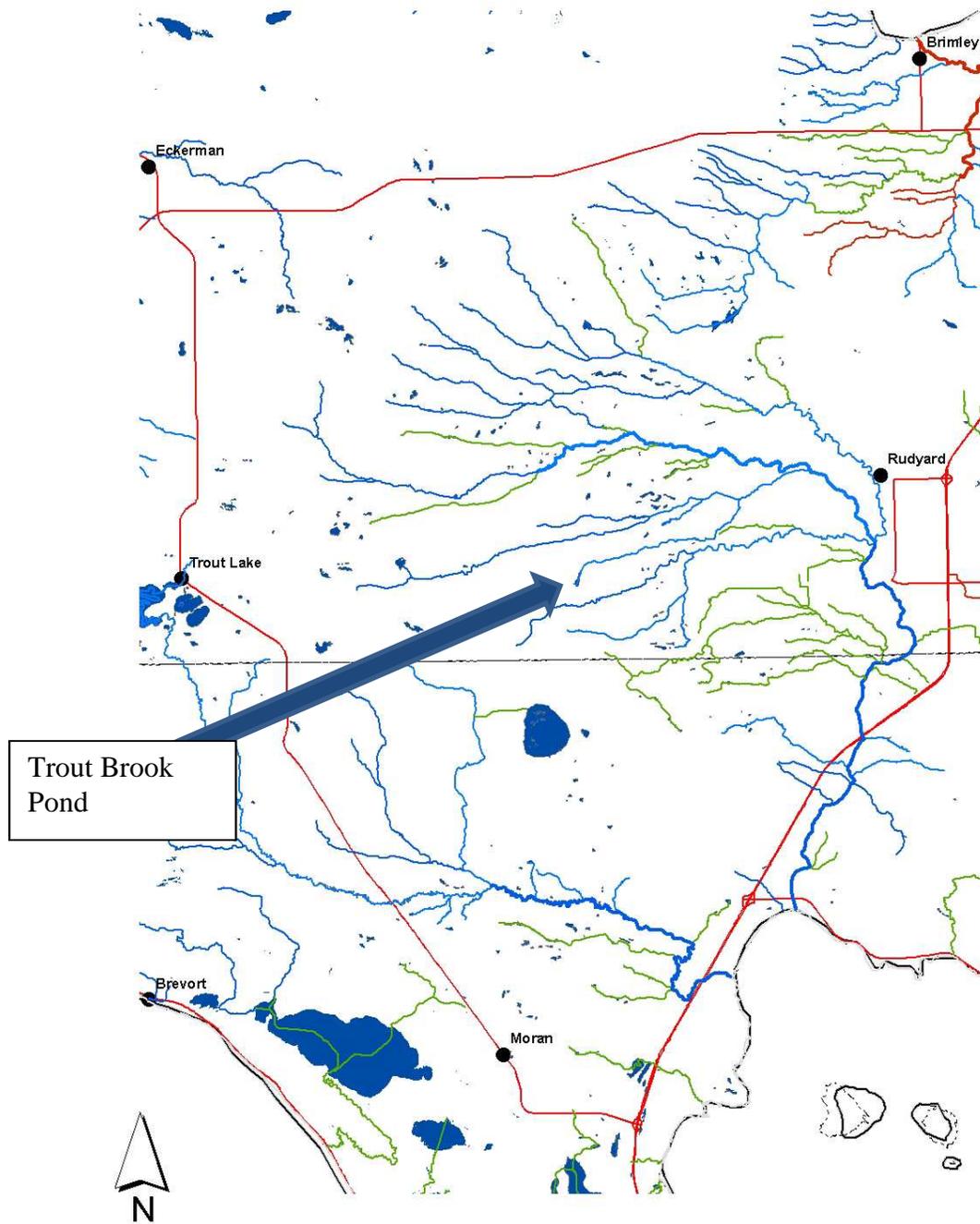


Figure 1. Location of Trout Brook Pond.

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# TROUT BROOK POND MAP

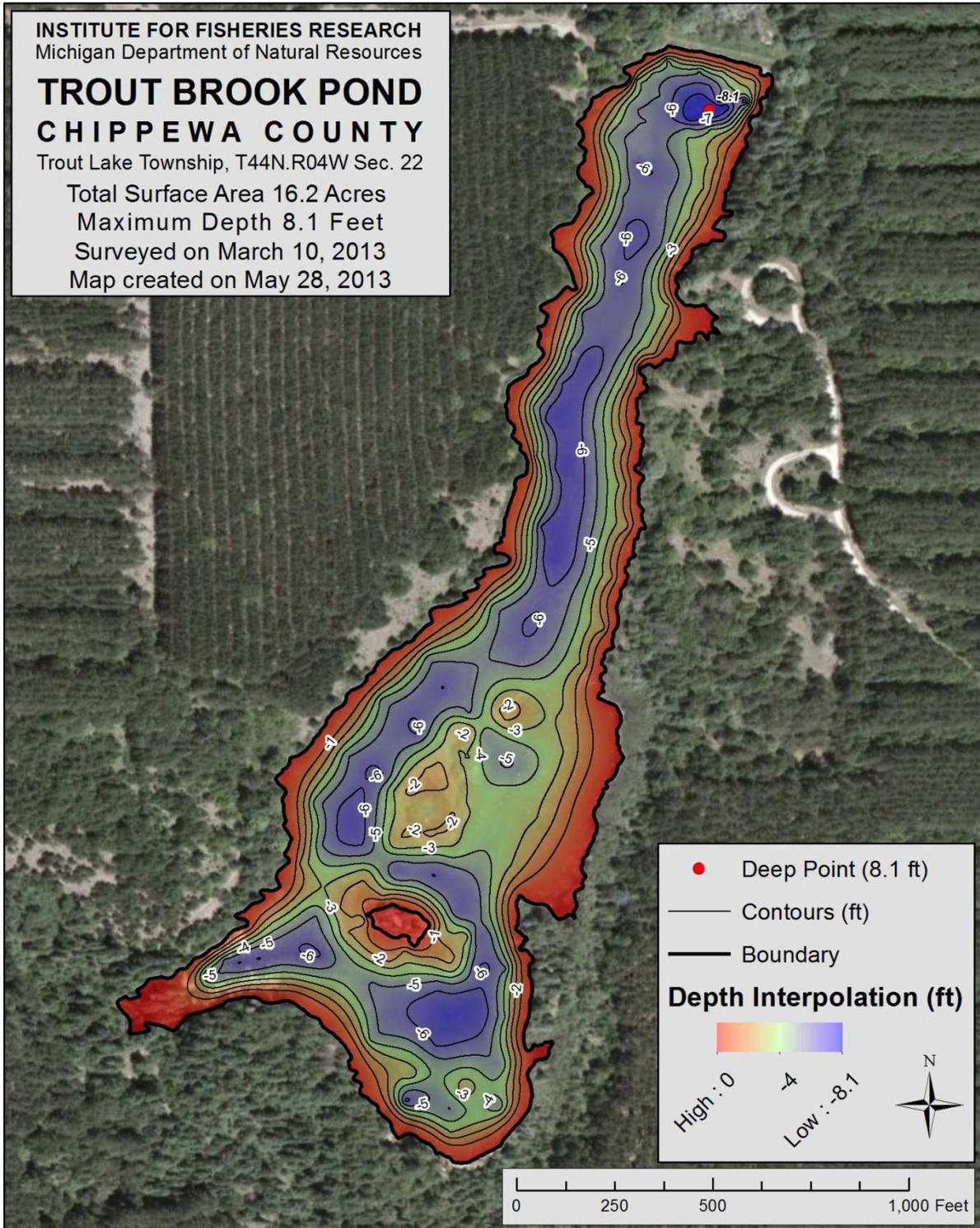


Figure 2. Depth map of Trout Brook Pond.

Table 1. Year, number, and life stage of brook trout stocked in Trout Brook Pond, Chippewa County.

<b>Year</b>	<b>Number stocked</b>	<b>Life stage stocked</b>
1959	1,150	Legal
1959	25,000	Fingerlings
1960	900	Legal
1961	800	Legal
1962	800	Legal
1963	100	Legal
1964	2,650	Legal
1965	3,000	Sublegal
1965	600	Legal
1966	5,000	Fall Fingerlings
1967	1,500	Yearlings
1968	1,800	Yearling
1969	1,000	Yearlings
1970	1,000	Yearlings
1971	1,000	Yearlings
1972	7,500	Fingerlings
1973	750	Yearlings
1974	--	--
1975	800	Fall Fingerlings
1975	2,000	Spring Fingerlings
1976	2,000	Fall Fingerlings
1977	1,350	Fall Fingerlings
1978	--	--
1979	1,650	Spring Fingerlings
1980	1,650	Spring Fingerlings
1981	1,650	Spring Fingerlings
1982	1,600	Spring Fingerlings
1983	1,620	Fall Fingerlings
1984	1,650	Fall Fingerlings
1985	1,510	Fall Fingerlings
1986	1,650	Fall Fingerlings
1987	1,650	Fall Fingerlings
1988	1,650	Fall Fingerlings
1989	1,650	Fall Fingerlings
1990	1,650	Fall Fingerlings
1991	1,650	Fall Fingerlings
1992	1,650	Fall Fingerlings
1993	1,650	Fall Fingerlings
1994	1,650	Fall Fingerlings

Table 2. Number, percent by number, length range, and growth rate by species captured during the June 4-6, 2013, survey of Trout Brook Pond, Chippewa County. Growth rate is reported for brook trout only, and is a comparison to the statewide average length at age for that species.

<b>Species</b>	<b>Number</b>	<b>Percent by Number</b>	<b>Length Range (in.)</b>	<b>Growth Rate</b>
Brook trout	38	9.7	3-13	-0.9
Blacknose dace	240	6.2	1-3	--
Bluntnose minnow	25	6.4	1-4	--
Brook stickleback	4	1.0	1-2	--
Central mudminnow	24	6.1	3-4	--
Northern redbelly dace	60	15.3	1-4	--
Rock bass	1	0.3	4-4	--

Table 3. Length-frequency and age class of brook trout, by inch group, captured in the June 4-6, 2013, survey of Trout Brook Pond, Chippewa County.

Inch Group	Number	Age Class
3	2	0
4	--	--
5	2	I
6	3	I
7	7	I
8	6	I-II
9	4	II
10	4	III
11	6	III
12	2	III
13	2	III

Table 4. Depth (to the nearest foot), dissolved oxygen concentration (ppm), dissolved oxygen concentration, temperature (degrees F), pH, and specific conductivity ( $\mu\text{s}/\text{cm}$ ) measured along three depth profiles of Trout Brook Pond, Chippewa County, on March 10, 2013.

Profile	Depth (ft)	D.O. (ppm)	D.O. (%)	Temperature (F)	pH	Sp. Conductivity
1	0	4.97	37.7	34.0	7.3	285
	1	6.45	51.3	40.2	7.2	314
	2	1.59	11.8	41.1	6.9	389
	3	0.69	5.5	41.9	6.9	466
	4	0.55	4.5	42.4	6.7	532
	5	0.32	2.5	43.1	6.6	581
2	0	8.81	62	34.8	7.3	290
	1	8.7	66	37.0	7.4	320
	2	7	54.5	39.5	7.3	334
	3	1.2	8.5	41.2	7.0	435
	4	0.52	4	41.7	6.8	555
	5	1	8.1	41.9	6.7	539
3	0	9.8	69	34.7	7.4	305
	1	9.3	67.5	34.9	7.4	305
	2	8.8	68.5	38.3	7.5	327
	3	8.9	70	39.4	7.5	330
	4	4.5	33	40.4	7.1	420
	5	1.7	11.5	40.9	7.1	425
	6	0.6	5	41.0	7.1	424