Robinson Creek
Roscommon County, T24N, R02W/03W
South Branch Au Sable River watershed, last surveyed 2020

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Environment

Robinson Creek is a designated Michigan trout stream and a major tributary to the South Branch Au Sable River in Crawford County. It flows for approximately 6 miles in a northerly direction and empties into the South Branch Au Sable River in the town of Roscommon (Figure 1). Robinson Creek is formed from the combined contributions of surface waters from the Robinson Creek Flooding and Robinson Lake. As a surface water supply, temperatures will be more variable and warmer in summer than would be typical of more stable and colder groundwater contributions. The creek crosses under a small number of roads in and near the town of Roscommon and is generally low gradient. Robinson Creek and the majority of its' reaches flow through a variety of riparian habitats which are mostly dominated by lowland tag alder. Land ownership along its course is primarily private.

The creek is warm-cool in its upper reaches, gaining groundwater as it flows towards the town of Roscommon, thereafter transitioning to a cool-cold water creek. The outlet from the Robinson Creek Flooding passes through a water control structure managed by DNR and owned by Wildlife Division. The structure was built in 1955 to increase available wetland habitat for wildlife species. The outlet from Robinson Lake drains through a small and shallow natural lake basin and no water control structures are present. Robinson Lake and the Robinson Creek Flooding are shallow allowing for significant warming in the summer. Both outlets merge to form Robinson Creek (Figure 1).

An inventory of road-creek crossings was conducted on the watershed by Huron Pines, a local conservation agency in 2013. Two road crossings (Old 27 and Robinson Lake Road) were rated as moderate to severe in condition indicating future repair or replacement was needed for the benefit of the ecosystem. Detailed data for each crossing can be viewed at: http://www.northernmichiganstreams.org. Three other crossings (Division Street extension, Fourth Street, and Main Street]) are present in the watershed and were not inventoried by Huron Pines.

Robinson Creek is categorized as a Type 1 trout stream regulated as such by the State of Michigan. Open fishing seasons for trout begin on the last Saturday in April and run through September. All tackle types are allowed and the minimum size limits are 7 inches for brook trout, and 8 inches for brown trout. The daily bag limit for trout is five fish, of which no more than three trout over 15 inches can be kept.

History

Survey information is limited for Robinson Creek. Records from the Michigan Department of Conservation (MDOC) indicate that Robinson Creek was stocked with fall fingerling or adult Brook trout from 1937-1964 and Rainbow Trout adults in 1965. This was a period when it was common to stock adult trout, and little justification or evaluation was needed. Stocking was discontinued after

1965, as management agencies and the public began to appreciate and protect wild stocks of trout over stocked fish.

Four locations on Robinson Creek were surveyed in the 1920s by MDOC personnel. Limited notes indicate that a population of Brook Trout was present throughout the creek. Water temperatures were monitored at an unknown location (though likely not at the headwaters) in the summer of 1958. Monthly temperatures over summer were relatively cool, averaging 59°F, 63°F, and 62°F in June, July and August.

MDOC conducted an electrofishing survey in section 20 in 1967. This reach was closer to the headwaters (likely Robinson Lake Road) and managers considered the reach too warm for trout. Despite this, six Brook Trout and one Brown Trout were collected during the survey.

In 1989 the Michigan Department of Environmental Quality (MDEQ) assessed stream water quality to determine if DDT and toxaphene were leaching from a nearby defunct dump site and entering the groundwater and thereby Robinson Creek. Data indicated there was no ongoing discharge of contaminants to the creek or sediments. Tissue samples collected from Brown Trout indicated DDE concentrations that were well below levels of environmental and public health concern. Other species collected during the survey included Brook Trout, Northern Hog Sucker, White Sucker, Blacknose Dace, Common Shiner, Johnny Darter, and Mottled Sculpin.

Current Status

Recent examinations of the Robinson Creek fish community and temperature regime have been conducted by the Michigan Department of Natural Resources (MDNR) and Au Sable River Watershed Committee. In the summer of 2012, MDNR monitored the temperature the confluence with the South Branch Au Sable River. During the months of June through August temperatures averaged or were near 60F which were indicative of a cool-cold water thermal regime in the lower reaches of the creek.

In late-July 2014, MDNR surveyed a 452 ft stretch of the creek at Robinson Lake Road. The backpack electrofishing survey began upstream of the road. Bottom substrate in the 452 ft reach was sand with pockets of gravel and silt. The creek width ranged from 12-20 feet and the riparian zone was dominated by tag alder. This reach was highly sinuous with some undercut banks and moderate amounts of small woody structure.

Eleven age-1 and older trout were collected, and included one brook trout, and ten brown trout (Table 1). No juvenile trout were collected indicating limited spawning habitat or limitations due to seasonably high water temperatures. Other species collected include Blacknose Dace, Johnny Darter, Creek Chub, Mottled Sculpin, Common Shiner, White Sucker, Hornyhead Chub, Central Mudminnow, Black Bullhead, Pumpkinseed, and Green Sunfish.

From 2017-2020 temperatures of Robinson Creek were monitored hourly during summer at three stations. Onset meters owned by the Au Sable River Watershed Committee were placed directly below Robinson Creek Flooding, at Robinson Creek Road, and in the town of Roscommon at Division Street. Results clearly showed the warm water temperatures in the headwaters (Flooding), and a cooling effect as the stream flowed towards its confluence with the South Branch Au Sable (Figure 2). The coldest temperatures were in the town of Roscommon. Maximum water temperatures in July were often above

80F near the flooding and ranged from 72-76F in Roscommon (furthest downstream). On average, July temperatures ranged from 67-77F below the flooding, were 64-69F at Robinson Lake Road, and were lowest 60-62 F at Division Street in Roscommon. Indication that significant cooling as ground water contributions increased downstream.

On July 21, 2020, MDNR conducted an electrofishing survey at two stations on Robinson Creek. A stream shocker with two probes was used to survey station 1 (between Main Street and its confluence with the South Branch Au Sable River, 750 ft) and station 2 (upstream from a foot bridge at the end of Division Street, 668 feet). Water temperature ranged from 57-58F, and both water clarity and sampling efficiency was considered good at the time of the survey. In-stream habitat (pools, in-stream wood) was fair at both locations but considered better at station 2. Undercuts and deeper holes were present at both stations but were more prevalent at station 2. Stream width averaged 20 ft at both stations and was wide in places along station 1. Refuse was more prevalent along the creek banks at station 1 within the town of Roscommon. Fish catches were generally low at both stations, but multiple species were collected. Non-trout species collected include: Blacknose Dace, Brook Stickleback, Common Shiner, White Sucker, Hornyhead Chub, Johnny Darter, Mottled Sculpin, Central Mudminnow, Northern Pike, and Rock bass. One Brook Trout was collected during the survey, it was collected from Station 2 and was 12 in. Only 15 brown trout were collected from both stations and ages ranged from 1-4 and size from 6-18 in. (Table 2). No age-0 juvenile trout were collected during the survey.

Analysis and Discussion

The 2014-2020 fish and temperature surveys were conducted to better understand the biological and thermal structure of the system. The headwaters of Robinson Creek occur when two warmer water creeks which are outflows from a shallow lake and flooding in Roscommon County merge. Both the lake and flooding are too warm in the summer to support cold water species. The character of the creek changes as it progresses downstream from low gradient reaches to areas with slightly higher gradient and some groundwater inputs. Water temperature monitoring throughout Robinson Creek strongly supports this. Trout are present in low numbers in most areas of the creek but are more prominent in the reaches near the town of Roscommon where thermal habitat is more suitable. Age-0 trout are not found in Robinson Creek indicating possible lack of juvenile habitat, or more likely cold enough water temperatures to sustain trout at early life stages. Reaches of regional rivers and creeks with colder temperatures usually have age-0 trout present. In-stream habitat is acceptable for adult trout survival from Robinson Lake Road to its confluence with the river. Sand bed loads are naturally high as the stream cuts through sandy loam soil. The lower reaches of the creek offer cool to cold summer water refugia for trout experiencing warmer waters from South Branch Au Sable River or further upstream on Robinson Creek.

Management Direction

Robinson Creek has marginal water temperatures for trout in its upper reaches, and more suitable cool-cold water for trout in the lower reaches. While there is little quantitative information to describe fishing pressure on Robinson Creek, we know the creek is used by anglers and believe effort to be low with little impact on the trout community. Robinson Creek is subject to fishing regulations associated with Michigan Type 1 trout waters (where all tackle types may be used, fishing season is from the last Saturday in April through September, anglers may keep five trout per day, and minimum size limits are

7 inches for brook trout and 8 inches for brown trout). The regulation type seems appropriate for Robinson Creek.

Concerns have been raised about the control structure on the Robinson Lake Flooding and continued warm water inputs to Robinson Creek that result. The Robinson Lake Flooding does contribute warm water, but so does Robinson Lake. Removal of the control structure at the flooding by Wildlife Division would have some positive impacts on the creek itself, though they might be marginal since the creek would still drain through a large shallow wetland, even after the barrier was removed, which could elevate water temperature in a similar fashion to the flooding. The dam remains the responsibility of MDNR Wildlife Division, which support the benefits of the flooding for recreation and wildlife.

The primary management goal for Robinson Creek is resource protection. Recent road-stream crossing inventories have been completed for the entire Au Sable River watershed. Some of the higher priority crossings with highest need of repair are in the Robinson Creek sub-watershed. The sites in Robinson Creek will be addressed by priority as established for the entire Au Sable River watershed. Refuse near developed areas is a problem in the lower reaches of the creek. We encourage non-profit and environmental groups such as Trout Unlimited to facilitate clean-up and improve practices.

References

Figure 1. Robinson Creek in Roscommon County and its surroundings.

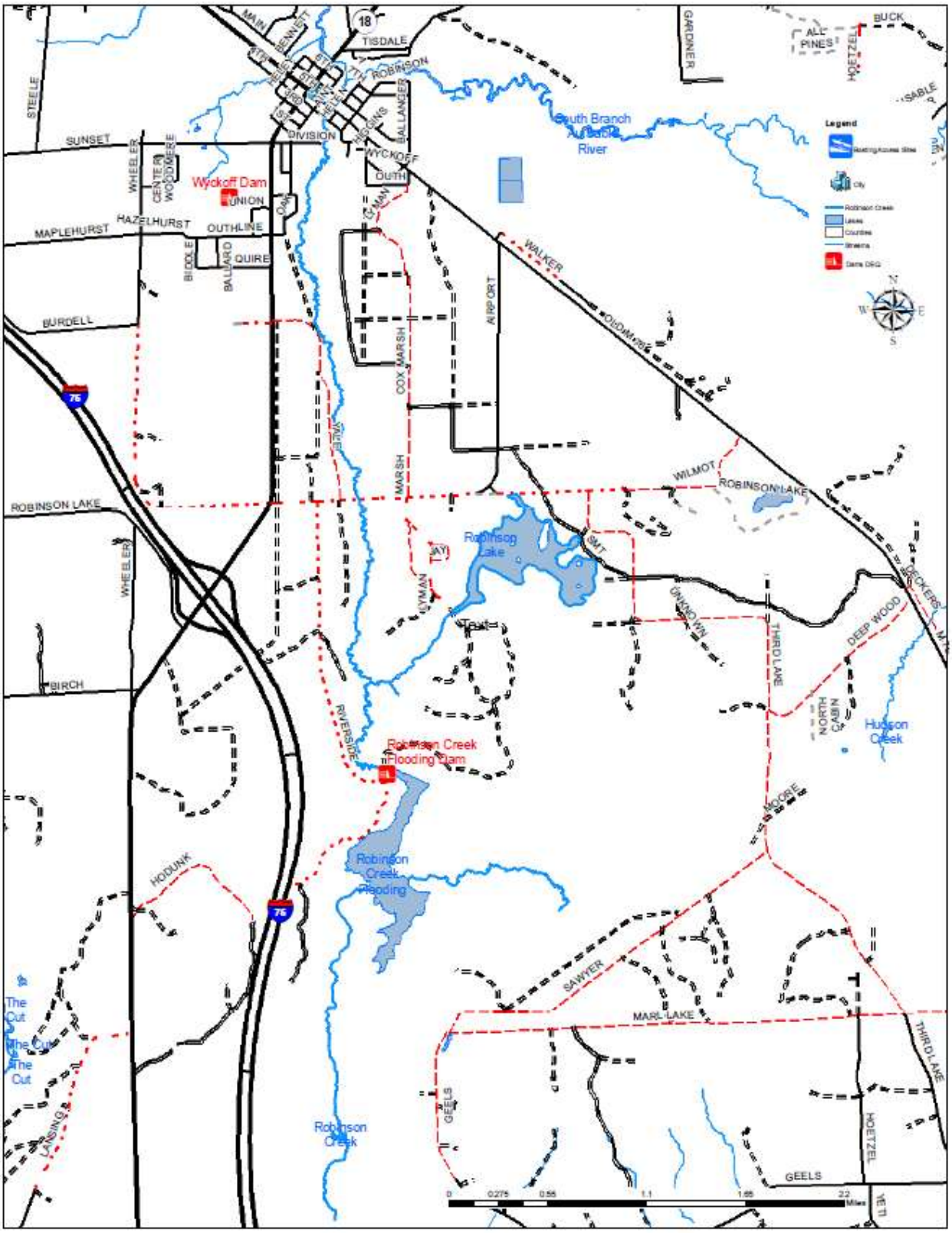

Figure 2. July average and maximum temperatures between three Robinson Creek sites from 2017-2020. Data collected by the Au Sable River Watershed Committee and summarized by MDNR.

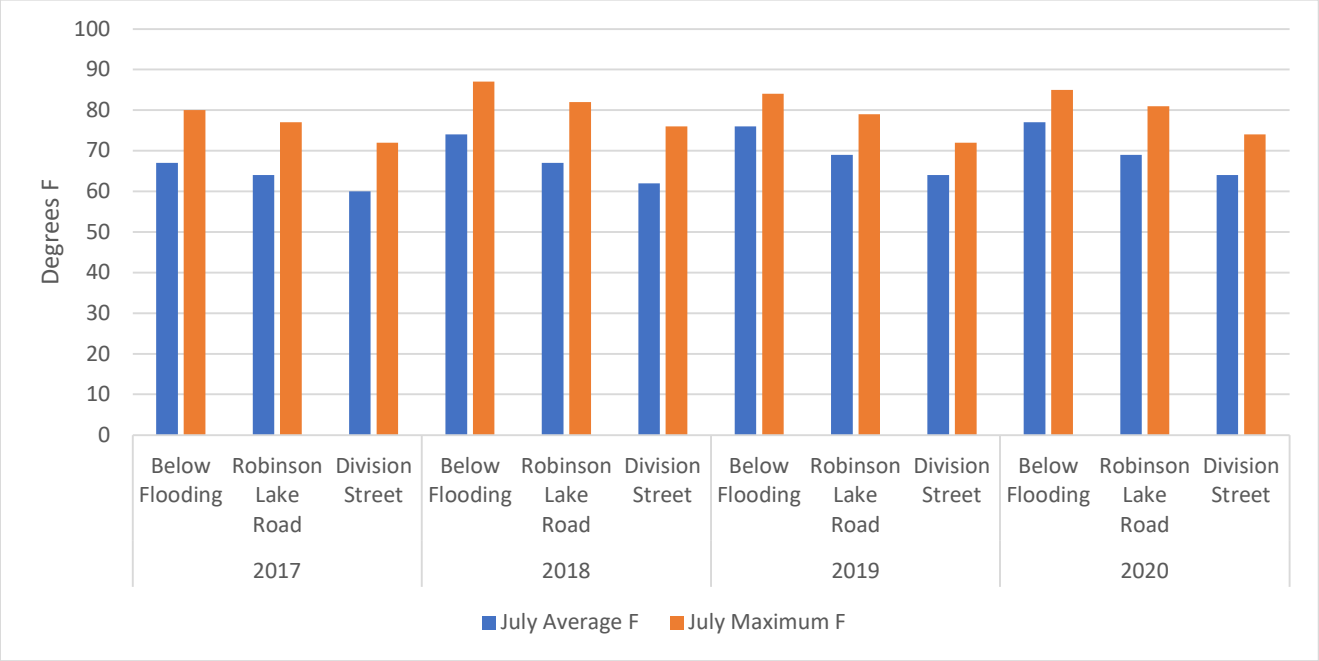

Table 1. Length and ages of trout collected in a 452-foot reach of Robinson Creek at Robinson Creek Road in late-July 2014.

Inch Group	Brook Trout no. collected (age)	Brown Trout no. collected (age)
6.0 – 6.9	1 (I)	
7.0 – 7.9		
8.0 – 8.9		4 (II)
9.0 – 9.9		3 (II)
10.0 – 10.9		2 (II)
11.0 – 11.9		
12.0 – 12.9		
13.0 – 13.9		1 (III)

Table 2. Length and ages of trout collected in 1,418-ft of Robinson Creek in July 2020. Stations were from Main Street to the confluence (approximately 750 feet), and upstream of bridge at end of Division Street (668 feet). Trout catch was combined from two stations.

Inch Group	Brook Trout no. collected (age)	Brown Trout no. collected (age)
6.0 – 6.9		2 (I)
7.0 – 7.9		2 (I)
8.0 – 8.9		1 (II)
9.0 – 9.9		
10.0 – 10.9		
11.0 – 11.9		
12.0 – 12.9	1 (II)	
13.0 – 13.9		2 (III)
14.0 – 14.9		
15.0 – 15.9		1 (IV)
16.0 – 16.9		2 (IV)
17.0 – 17.9		3 (V)
18.0 – 18.9		2 (-)