

HooRWA's Stream Temperatures Sampling — Hoosic Watershed, 2024

The Hoosic River Watershed Association has been collecting stream temperature data within the Hoosic River watershed for over 20 years, with the objective of better understanding the conditions that make it a cold-water fishery. The program in 2024 had two objectives.

First Objective: to determine the contributions of Hemlock Brook to the Hoosic River. Hemlock Brook is a tributary of the Hoosic that drains an area of 14.1 square miles and has a slope of 23.19%. This tributary is 79.13% forested and enters the Hoosic in north Williamstown west of Bonnie Lea Farm.

Second Objective: to determine the contributions of the Green River to the Hoosic River. The Green River is also a tributary of the Hoosic. Including its east and west Branches, the Green has a drainage area of 43 square miles, a slope of 24.42% and is 77.03% forested. It enters the Hoosic east of downtown Williamstown.

Procedure

Five temperature data loggers (Tidbit MX2203 from Onset) were placed in Hemlock Brook, starting from near the Hemlock Brook Condos in Williamstown and continuing upstream — ultimately to Treadwell Hollow, on the flanks of the Taconic Range.

Three sensors were placed in the Green River, including one just upstream of the confluence with the Hoosic and one just downstream of where the East and West Branches join together. Two additional sensors were placed in the Green's West Branch, and one sensor was placed in its East Branch. Finally, one sensor was placed in the Hoosic, just upstream of where the Green joins in. In all, 12 sensors were placed this summer.

The sensors were placed on May 14 and retrieved on or about September 13. They were set to record the water temperatures hourly. The primary statistic calculated from the readings was the maximum weekly average temperature (MWAT). Additionally, we calculated the number of days the average temperature exceeded 68 degrees Fahrenheit (20 degrees Centigrade). A daily temperature above 68 degrees F is considered a critical threshold for many cold-water fish species. And we also examined the trends over time of the weekly average temperatures.

Results

Ten of the 12 sensors were retrieved successfully. They are shown in the following table. The sensor at GW00.15, upstream of where the East and West Branches of the Green join together, was not found, nor was the one in the Green River (GN00.10) just before it enters the Hoosic.

(Note 1. The site codes are derived from the name of the stream, i.e. GN for Green River, and the distance from the stream's confluence with the next higher order stream, in kilometers).

	GW01.85	GN10.61	GN09.81	GN05.05	HM10.23	HM06.28	HM06.09	HM04.24	HM00.71	HR06.00
MWAT (date of max.)	71.79 (7/13)	68.97 (7/13)	71.95 (7/13)	72.41 (7/13)	66.46 (7/13)	67.46 (7/13)	70.12 (7/13)	69.3 (7/13)	70.85 (7/13)	75.56 (7/13)
Days > 68.0 F	32	10	29	30	0	2	17	15	27	53

MWAT

The overall pattern for the MWAT is slightly different than what we'd expect. Our results from past years have shown, generally, that tributaries contribute cooler waters to the next higher order river segment they connect to. This holds true this year for Hemlock Brook and the Green River, which both feed into the Hoosic. The Green River's West Branch differs, though: as it approaches and joins the Green River, its waters are warmer than those of the Green River itself.

Another notable result is the temperature increase in MWAT from site HM06.28 to HM06.09, nearly three degrees. Separating these two locations is Margaret Lindley Park's swimming pond, a shallow water body managed by the Town of Williamstown's Conservation Commission. The pond is fed by diverting some of Hemlock Brook's water towards a small dam. A spillway at the top of the dam returns the water to the brook. Point-to-point along Hemlock Brook, the two temperature sensors were located only about 800' apart — in that short distance, with the pond between them, the water warms nearly three degrees on average.

Days > 68 F

The number of days with average temperatures above 68 degrees F show the effects of the West Branch's warmer water on the Green, and also of Margaret Lindley Park's impact on Hemlock Brook. Further, as both streams flow through the Williamstown — through increasingly developed residential areas — towards the Hoosic, the number of days above 68 F rises at each successive location. The general warmth of the Hoosic River is also highlighted here.

Conclusions

Hemlock Brook and the Green River were not consistently cool enough to support a coldwater fishery during the 2024 period. However, both rivers likely provided beneficial cooling to the Hoosic River, which was much warmer than either contributing river.

With regard to Hemlock Brook, the swimming pond at Margaret Lindley Park is a concern. In general, it seems to have a significant warming effect on Hemlock Brook. By the end of this relatively dry rain season, nearly the entire Brook was being diverted into the pond due to low water levels.

Similarly, the relatively warm waters of the Green River's West Branch are a concern. While both the West Branch and the Green River originate in mountains (the Taconics, and Mt. Greylock and

Brodie, respectively), the West Branch may warm more significantly as it passes through an agricultural corridor (and golf course) along Route 43 in Massachusetts before joining the Green River. There is also a wetland/beaver complex north of the Hancock and Williamstown boundary that could affect the water temperatures.