

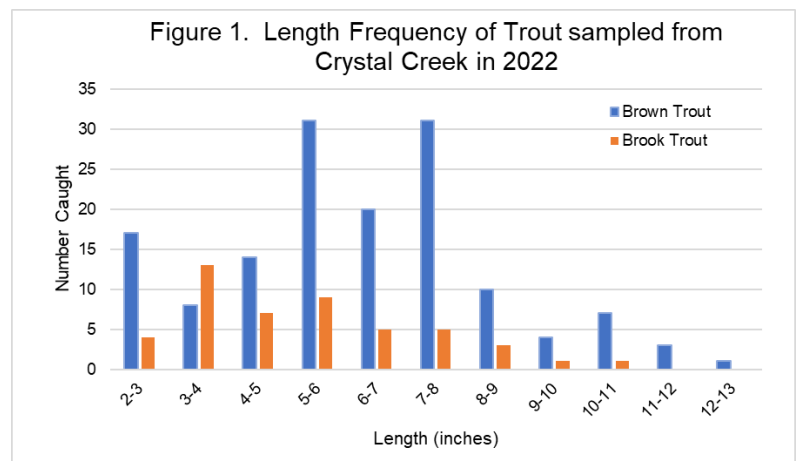
Crystal Creek Young of Year Population Estimate (Survey #:622013)

Les Resseguie, Region 6 Fisheries

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Crystal Creek (ONT-19-45) is a 14-mile-long tributary to the Black River in the Lewis County Town of New Bremen. The stream is classified as C(T) and A(T) by NYSDEC Division of Water (i.e., suitable for fishing (C) and drinking (A), and trout present). Ample public access is available through 10.5 miles of Public Fishing Rights easements which include two Fisherman Parking Areas. Crystal Creek is managed as Wild-Quality (NYSDEC 2020) from the confluence with the Black River upstream to Crystal Pond Dam, and from Crystal Pond upstream to Erie Canal Road. Angling regulations for trout in a Wild-Quality reach are an open season of April 1 – October 15, daily creel limit of 3 fish with no more than one over 12 inches; and an October 16 – March 31 catch and release, artificial lures only season. In response to angler concerns regarding the new catch and release season and potential negative impacts to wild trout spawning and recruitment, a statewide evaluation was initiated (2021 – 2024) to determine if the new regulation negatively impacts young-of-year (YOY) production in select trout streams across New York (NYSDEC 2021).

Using backpack electrofishing and three pass depletions, three standard sites were surveyed in 2021 (Resseguie 2022) to evaluate the relative abundance of YOY trout within the Wild-Quality section. The same sites and survey methodology was repeated 8/29-30/2022 and a total of 194 brook trout and brown trout were collected ranging 2.2-12.4 inches (Figure 1). Based on length frequency distribution, 61 trout were classified as YOY (≤ 5 inches; 125 mm). Using the binomial depletion model (Sullivan 2003), we calculated YOY population estimates and capture efficiencies, with 95% confidence intervals, for each year (Table 1).



In 2022, stream discharge was higher than 2021 making it difficult for staff to wade and effectively net fish throughout of the survey reach. Discharge was not great enough to consider the stream unfishable, yet YOY trout may likely be utilizing different habitats in the increased flows which may account for variability in capture efficiencies and estimated YOY population estimates between the years. Site 3, located within the formerly stocked reach below Crystal Pond Dam, is comprised of a very deep pool followed by swift pocket water. Four electrofishing passes were needed at Site 3 in 2022 due to the difficulty depleting all trout through each pass and YOY trout were captured at a rate of $n=2$, $n=1$, $n=0$, $n=0$. Due to small YOY sample size and low variability, the calculated YOY population estimate is likely not representative of the section. To maintain consistency, no modifications to site location or survey methodology is anticipated and data will continue to be collected each year through 2024. We recommend the

stream be reclassified as C(TS) and A(TS) by NYSDEC Division of Water (i.e., suitable for fishing (C) and drinking (A), and trout spawning).

Temperature loggers, set to capture hourly temperature data are deployed at two locations from June through September to better understand trout habitat on Crystal Creek. Temperature data can be highly variable daily, but suggest decent thermal habitat exists in Crystal Creek with water temperatures averaging 60-64°F (high of 77°F, low of 49°F) observed across the sample period. Data for 2021 and 2022 can be viewed at [SHEDS Stream Temperature Database \(ecosheds.org\)](http://ecosheds.org).

Table 1. The 2021 and 2022 Catch per Unit Effort (CPUE, fish/acre), estimated young of year population estimate (N; estimated fish/acre) and capture efficiencies (p; probability of capture) with 95% confidence intervals (Brown and Brook trout combined).

	Site	Number of All Trout	Number of YOY Trout	Acres	CPUE	CPUE	N	p
					All trout (per acre)	YOY Trout (per acre)	Estimated YOY per acre (95% CI)	YOY Capture Efficiency (95%CI)
2021	1	95	47	0.37	255	126	170 (148-196)	0.35 (0.27-0.43)
	2	64	22	0.26	248	85	95 (85-109)	0.51 (0.35-0.64)
	3	80	16	0.25	314	63	65 (63-75)	0.60 (0.4-0.75)
	Total	239	85	0.88	207	96		
2022	1	92	38	0.44	207	86	124 (104-149)	0.32 (0.23-0.4)
	2	55	20	0.27	207	75	135 (102-181)	0.23 (0.15-0.32)
	3	47	3	0.28	167	11	11 (11-11)	0.79 (0.29-0.95)
	Total	194	61	0.99	196	62		

Literature Cited

NYSDEC. 2020. New York State Trout Stream Management Plan. Albany, NY: New York State Department of Environmental Conservation.

NYSDEC. 2021. Angler Use and Wild Trout Young of Year Recruitment; Evaluating New York's Winter Catch and Release Season. Albany, NY: New York State Department of Environmental Conservation.

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Sullivan, P. and Boomer, S. 2003. An Empirical Bayes Approach for Estimating the Binomial N from a Multiple Pass Depletion Survey with Application to Trout Streams in a New Your State Watershed. Cornell University.