WISCONSIN DEPARTMENT OF NATURAL RESOURCES

2023

Bear Creek, Oneida County

WBIC 1527500

Introduction And Objectives

Bear Creek is a cool-warm headwater stream meandering 3.19 miles within the Middle Tomahawk River Watershed in northern Wisconsin. The upper reach of Bear Creek is Class 3 trout waters and the lower reach is Class 2. Trout water classification indicates natural reproduction occurs within some stretches of Bear stream while other stretches are marginal trout habitats with no reproduction occurring. Sampling during 2023 sought to describe the trout population characteristics and asses the overall condition of the system.

DNR Contact

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Regulations

Category: Green
Daily Bag and Size Limit:
5 daily bag, no minimum length

SURVEY INFORMATION

Station	Survey Date	Station Length (ft)	Tempera-ture (°F)	Mean Stream Width (ft)	GPS (Start/Finish)	Gear	Dippers	IBI
Bear Creek, above county Hwy Y	8/9/2023	800	63.0	8.0	45.71057 –89.80349 45.71185 –89.80164	Stream shocker	2	50
Bear Creek, below county Hwy Y	8/8/2023	800	63.0	8.3	45.70865 –89.80334 45.71006 –89.80338	Stream shocker	2	50
Bear Creek at Hwy Y	8/8/2023	550	64.0	9.4	45.69711 –89.81239 45.69772 –89.81110	Stream shocker	2	60

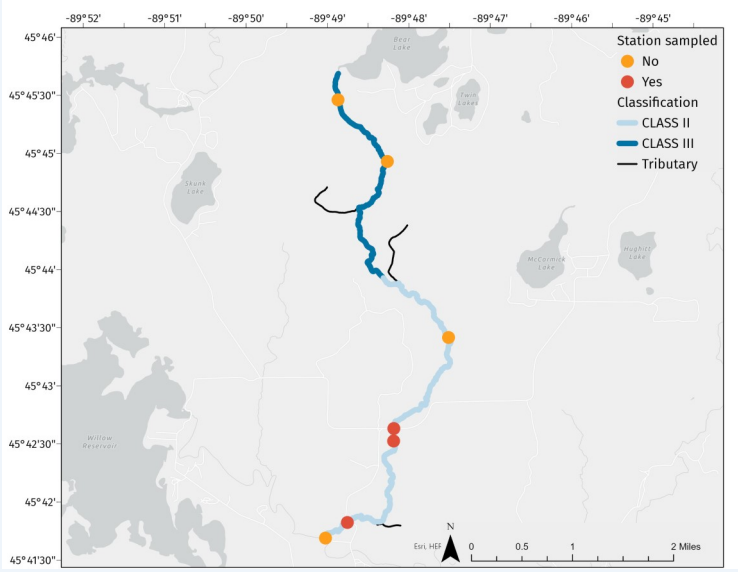

Figure 1. Station location and trout classifications Bear Creek, Oneida County, WI.

Survey Method

- All streams are sampled according to DNR wadeable streams monitoring protocols.
- All trout are counted and measured and all other species are counted in order to calculate an Index of Biotic Integrity (IBI) score.
- Metrics used to describe trout populations include average length, catch per unit effort (CPUE) and length frequency distribution.

Metric Descriptions

- **Catch per unit effort (CPUE)** is a method of quantifying fish population relative abundance. For all trout surveys, typically CPUE is quantified as the number of a given size class of trout captured per mile of stream. CPUE indexes are compared to other trout streams throughout Wisconsin by what percentile (PCTL) they fall out in. For example, if a CPUE is in the 90th percentile, it is higher than 90% of the other CPUEs in the state. CPUE percentiles can also be used to categorize trout abundance as low density (<33rd percentile), moderate density (33rd - 66th percentile), high density (66th - 90th percentile) and very high density (>90th percentile).
- **Length frequency distribution** is a graphical representation of the number or percentage of fish captured by half inch or one inch size intervals.
- **Index of Biotic Integrity (IBI)** is a rating of environmental quality based on the fish assemblage. Scores of 90 - 100 indicate excellent stream quality, while scores less than 30 indicate poor stream quality. Our analysis utilizes the IBI for Wisconsin coldwater streams. Coldwater streams in Wisconsin are those in which the maximum daily mean water temperature is usually <22°C (71.6°F). A coolwater stream IBI may also be used when a stream doesn't fit the temperature criteria for a coldwater stream.

BROOK TROUT SIZE AND ABUNDANCE (CPUE) METRICS									
Station	Total Number Sampled	Average Length (inches)	Length Range (inches)	CPUE (No. per Mile) Statewide Percentile in Parentheses					
				Total CPUE	YOY CPUE	≥5" CPUE	≥8" CPUE	≥10" CPUE	≥12" CPUE
Bear Creek, above county Hwy Y	25	3.8	2.2-8.3	166.7 (75)	126.7 (85)	33.3 (60)	6.6 (60)	0.0 (70)	0.0 (90)
Bear Creek, below county Hwy Y	29	4.9	2.6-9.5	193.3 (75)	106.7 (82)	46.7 (70)	33.3 (75)	0.0 (70)	0.0 (90)
Bear Creek at Hwy Y	0	NA	NA	0.0 (40)	0.0 (65)	0.0 (45)	0.0 (55)	0.0 (70)	0.0 (90)

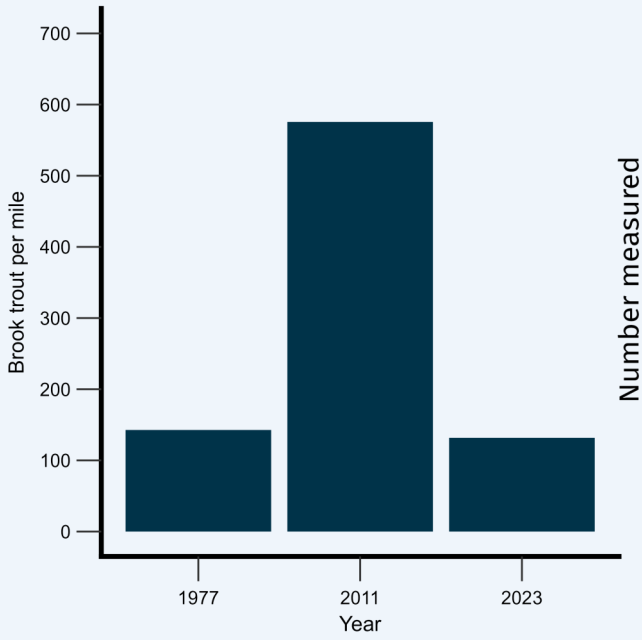

Figure 2. Stream wide brook trout catch per mile in Bear Creek sampled each years the stream has been sampled by a stream shocker.

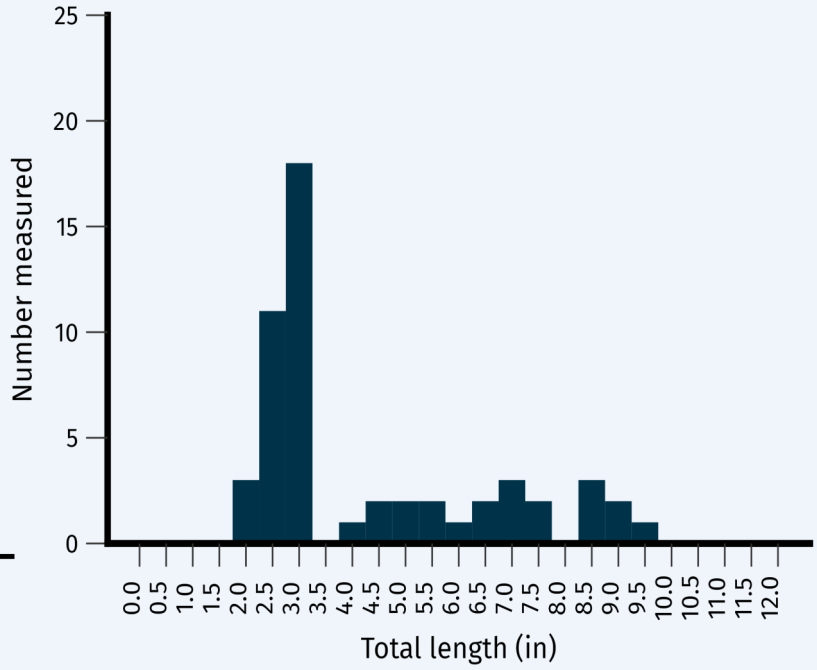

Figure 3. Brook trout size structure from all reaches sampled within Bear Creek during 2023. Lengths are combined together in 0.5 inch

Summary

- Bear Creek is in fair ecological condition with index of biotic integrity scores in the 50s.
- Bear Creek has a silt and mud bottom with banks dominated by tag alder.
- Creek chub was the most abundant species found during the 2023 Bear Creek survey.
- Brook trout abundance has been variable in Bear Creek (Figure 2).
- Brook trout catch was above the statewide median rate for individuals < 7.9 inches within Bear Creek.
- Brook trout catch was lower than the statewide median for individuals > 8.0 inches within Bear Creek.
- Average size of brook trout is 3 inches smaller in Bear Creek than the statewide average of 7.5 inches (Figure 3).
- Brook trout were stocked into Bear Creek during the 1950s and 1960s but have been self sustaining since.
- Four stations historically sampled were unable to be sampled in 2023 due to inaccessibility (Figure 1).