



# WISCONSIN DEPARTMENT OF NATURAL RESOURCES

## 2023 Feral Brook Trout Stocking Evaluation Lower Pine Creek, Dunn County

WBIC 2085300

### Introduction And Objectives

Lower Pine Creek originates in southern Barron County and flows southward into Dunn County where it enters the Red Cedar River near the town of Sand Creek. It is a low gradient, sand dominated tributary flowing through tag alder swamp and agricultural land. Lower Pine Creek is classified as a Class II trout stream in Barron County and Class III in Dunn County from the Barron/Dunn County line downstream to 770th St. Lower Pine Creek has relied on stocking to maintain a fishery and was historically stocked with brown trout yearlings from the 1970's to 1999. At that point, brown trout stocking ceased and domestic brook trout yearlings were stocked annually until 2016. Despite annual stocking, survival of brook trout was minimal and no natural reproduction was detected in surveys in the early 2000's. In 2017, feral yearling brook trout stocking began in an effort to establish a naturally reproducing population. Previous surveys were conducted in 1971, 2001 and 2018. This survey report evaluates the effectiveness of the feral brook trout stocking in establishing a naturally reproducing population of brook trout.

### DNR Contact

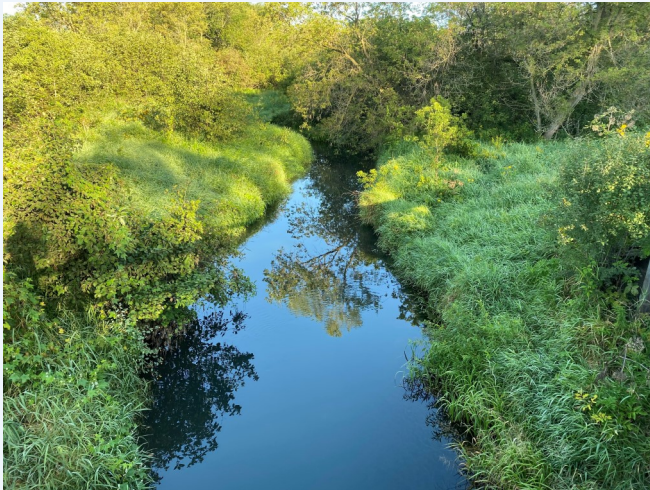
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### Regulations

Category: Green  
Daily Bag and Size Limit:  
5 bag, no size limit

### SURVEY INFORMATION

Station	Survey Date	Station Length	Temperature (° F)	Mean Stream Width	GPS (Start/Finish)	Gear	Dippers	IBI
Station 4	06/19/2023	696 ft	65	4.6 m	45.19793, -91.83111 45.19865, -91.83231	Stream Barge Shocker	2	N
Station 5	07/20/2023	652 ft	58	5.8 m	45.18792, -91.80987 45.1883, -91.81179	Stream Barge Shocker	2	Y



### 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.
- Surveys in 2023 occurred at or near stocking locations of feral brook trout.

### Metric Descriptions

- **Catch per unit effort (CPUE)** is a method of quantifying fish population relative abundance. For all trout surveys, we typically quantify CPUE 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.



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SPECIES SIZE AND ABUNDANCE (CPUE) METRICS									
Station	Total Number Sampled	Average Adult Length (inches)	Length Range (inches)	CPUE (No. per Mile) Statewide Percentile in Parentheses					
				Total CPUE (PCTL)	YOY CPUE	≥5" CPUE (PCTL)	≥8" CPUE (PCTL)	≥10" CPUE (PCTL)	≥12" CPUE (PCTL)
Station 4	10	9.3	1-12	76 (40)	30 (55)	45 (35)	38 (60)	23 (80)	8 (90)
Station 5	43	7.5	2-10	348 (75)	219 (80)	130 (60)	57 (70)	8 (65)	0

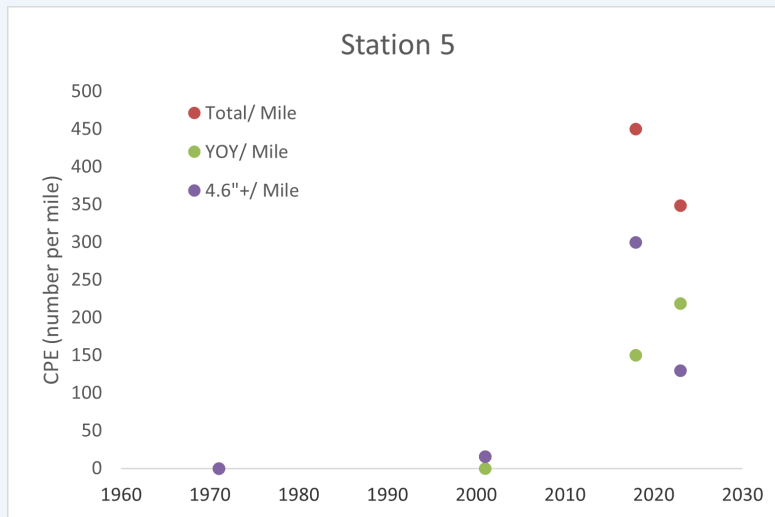


Figure 1. Relative abundance of 3 size classes of brook trout collected from Station 5 on Lower Pine Creek in 1971, 2001, 2018 and 2023.

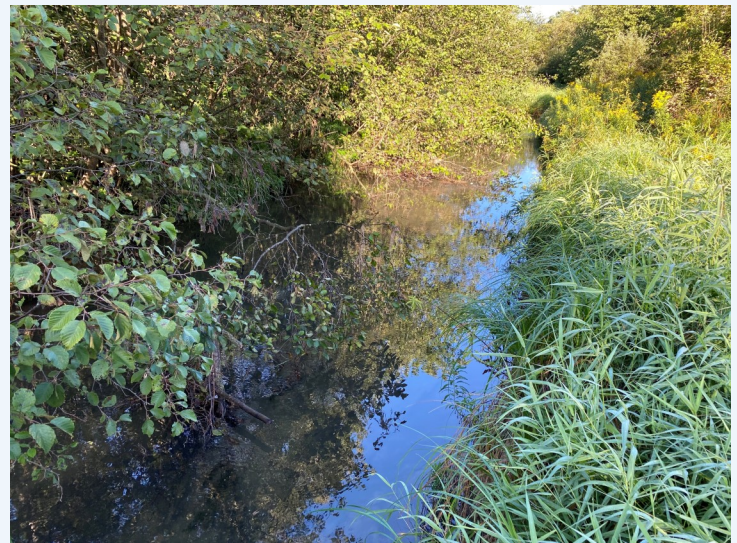
### Summary

The brook trout population within Lower Pine Creek has increased within the past several years, following the onset of feral brook trout stocking. Catch rates of adult and young of year have improved, indicating an increase in natural reproduction and recruitment in 2 stations on Lower Pine Creek since 2018. Surveys in 2018 indicated an increase in population abundance as well as documentation of natural reproduction for the first time in survey history at 1 of 2 stations surveyed after only 2 years of feral stocking at that time.

In 2023, 7 years after the onset of feral brook trout stocking, natural reproduction has increased and catch rates of young of year trout were in the 55th and 80th percentiles, indicating moderate to high abundance of age-0 trout. Prior to the 2018 survey, no natural reproduction of brook trout had been documented.

Adult abundances have also increased in recent surveys and were highest in 2018 and 2023. Station 5 contained the highest densities of brook trout which resulted in the 60th percentile for Class II trout streams across the state, followed by Station 4 with densities in the 35th percentile. Adult densities in 2001 ranged from 16-53 per mile. Brook trout larger than 12 inches were detected at Station 4 and catch rates were in the 90th percentile for that size class.

The success of brook trout in Lower Pine Creek is also likely attributed to improved conditions within the stream. IBI surveys have revealed improvements in integrity ratings from Fair with a score of 40 in 2001 to Excellent with a score of 90 in 2023. The percent of intolerant species has declined within Station 5 from 48% to 7%, potentially indicating improvements in water quality and/or temperature regimes for trout.





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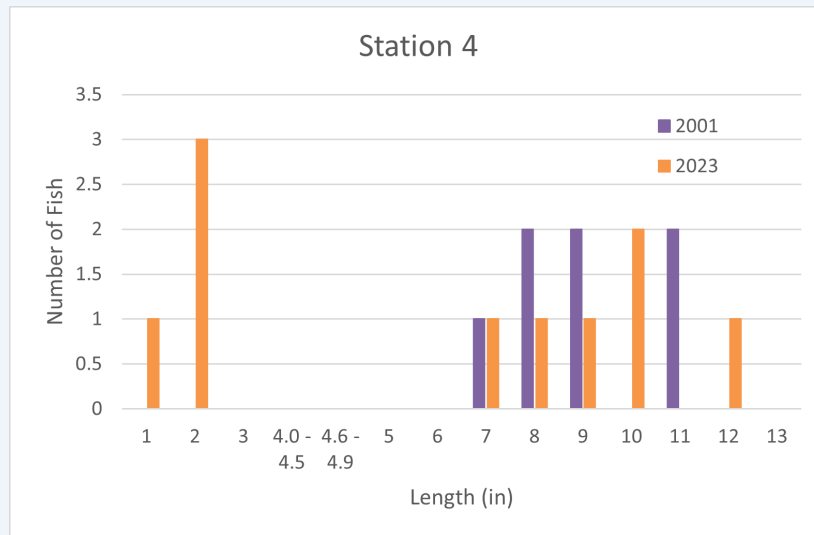


Figure 2. Length frequency distribution of brook trout collected from Station 4 on Lower Pine Creek in 2001 and 2023.

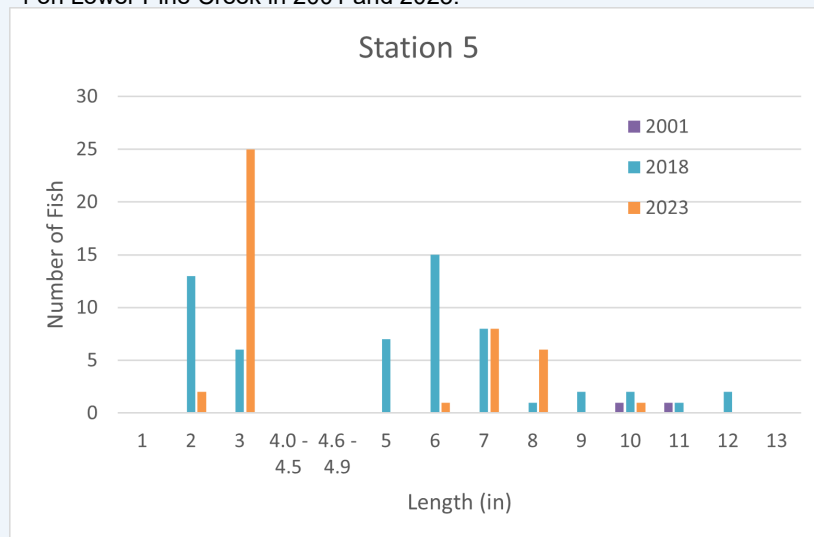


Figure 3. Length frequency distribution of brook trout collected from Station 5 on Lower Pine Creek in 2001, 2018 and 2023.

### Summary

- Brook trout abundance, natural reproduction and recruitment has improved considerably following the onset of feral brook trout stocking within the system. Natural reproduction was documented for the first time during 2018 surveys after only two years of stocking. Surveys in 2023 revealed stable densities and higher abundance of young of year fish as well as multiple year classes present at both stations. Stocked feral brook trout appear to be better suited to establish natural reproduction and natural populations as well as increased survival and recruitment when compared to domestic strain stocking in Lower Pine Creek.
- Despite slightly higher stocking rates of domestic fish (212 fish per year of domestics vs. 145 fish per year of ferals) and stocking domestic fish at a considerably larger size (8.9 inches-average size of domestics vs. 5.4 inches-average size of ferals), domestic strain stocking produced a very low density population with no documented natural reproduction after more than ten years of stocking. Total trout abundance averaged 34 fish per mile during the domestic strain stocking regime.
- Lower Pine Creek is a low gradient, sand dominated stream with tag alder as the dominant cover type within the stream and in the riparian zone. Based on the habitat that is available, brook trout appear to be maximizing use of available habitat and natural reproduction appears stable. Therefore, stocking will be discontinued and monitoring will continue on the watershed rotation schedule in order to evaluate future changes in the fishery. If stocking is needed to maintain the fishery in the future, feral brook trout stocking is recommended because of the higher return and survival of stocked feral fish to the fishery when compared to prior domestic strain stocking which resulted in minimal returns and no natural reproduction.