



WISCONSIN DEPARTMENT OF NATURAL RESOURCES

2021 Stream Survey Trend Report Radley Creek, Waupaca County 259300

Introduction And Objectives

The entire 11.5 miles of Radley Creek are classified as Class I trout water, with brown trout as the dominant salmonid. Brook trout are present in lower numbers but are relegated to the extreme headwater reaches. Trout population are supported entirely by natural reproduction with no stocking. Habitat development project have been completed in several areas throughout the stream including the trend survey site. Fishing access is very good thru multiple DNR-managed properties. Objectives of the trend survey are to monitor relative abundance and size structure.

DNR Contact

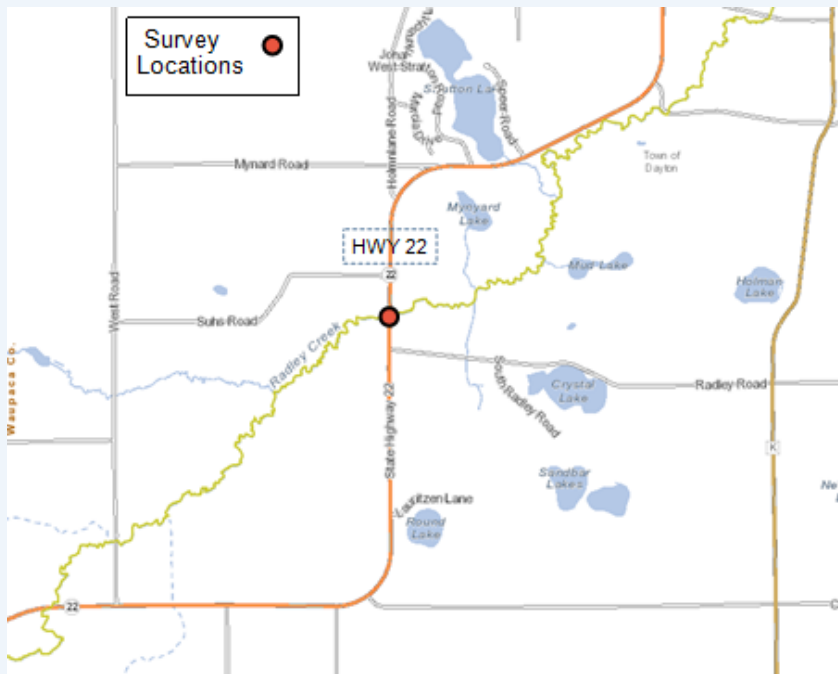
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Regulations

Category: Yellow
Daily Bag and Size Limit:
Three and 8-inch minimum

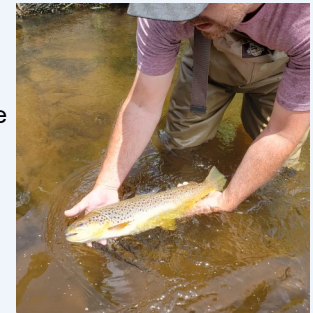
SURVEY INFORMATION

Station	Survey Date	Station Length	Temperature (° F)	GPS (Start/Finish)	Gear	Dippers
HWY 22 Trend Site	7/28/2021	2,000 ft.	55	44.2767,-89.1681 44.2759,-89.1928	Towed Barge Shocker	3



Survey Method

- All streams are sampled according to DNR wadeable streams monitoring protocols.
- All sampling stations are electrofished with either a towed barge shocker or backpack shocker.
- Sampling distance is at least 35 times the mean stream width or a minimum of 330 feet (i.e., 100 meters).
- 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.



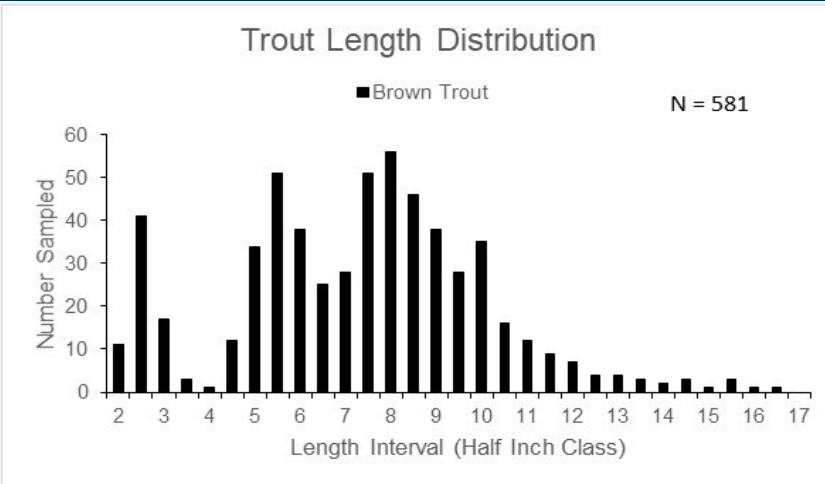
Metric Descriptions

- **Catch per unit effort (CPUE)** is a method of quantifying fish population relative abundance. For all trout surveys, 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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SIZE AND ABUNDANCE (CPUE) METRICS - BROWN TROUT										
Year	Average Length (Inches)	Length Range (Inches)	Number Sampled	CPUE (No. per Mile) Statewide Percentile in Parentheses						
				Total CPUE (PCTL)	YOY CPUE	≥6" CPUE (PCTL)	≥8" CPUE (PCTL)	≥10" CPUE (PCTL)	≥12" CPUE (PCTL)	≥15" CPUE (PCTL)
2007	6.8	(2.8-15.7)	592	1562 (90th)	243	982 (95th)	499 (90th)	158 (85th)	26 (65th)	3 (65th)
2008	6.7	(2.2-14.6)	553	1484 (90th)	260	1001 (95th)	437 (90th)	161 (85th)	29 (65th)	0
2009	6.8	(2.2-16.0)	421	1111 (85th)	214	694 (90th)	385 (90th)	158 (85th)	21 (60th)	3 (65th)
2010	6.7	(2.4-14.3)	507	1604 (90th)	418	1034 (95th)	449 (90th)	190 (85th)	28 (65th)	0
2011	7.1	(2.1-16.7)	525	1385 (90th)	208	897 (90th)	528 (90th)	227 (90th)	45 (75th)	5 (70th)
2012	7.6	(2.5-18.0)	494	1303 (90th)	140	892 (90th)	554 (90th)	237 (90th)	50 (80th)	8 (75th)
2013	7.4	(2.2-19.5)	514	1356 (90th)	142	942 (95th)	536 (90th)	179 (85th)	53 (80th)	11 (80th)
2014	7.3	(2.1-14.0)	449	1185 (85th)	74	778 (90th)	456 (90th)	185 (80th)	24 (65th)	0
2015	6.7	(2.4-13.3)	314	829 (80th)	92	528 (85th)	206 (80th)	63 (65th)	11 (50th)	0
2016	7.6	(2.7-14.1)	327	863 (85th)	13	668 (90th)	330 (85th)	127 (80th)	26 (65th)	0
2017	8.1	(2.8-14.1)	285	752 (80th)	45	662 (90th)	377 (90th)	145 (80th)	26 (65th)	0
2018	7.7	(2.3-15.7)	308	813 (80th)	29	633 (90th)	306 (85th)	137 (80th)	40 (75th)	3 (65th)
2019	7.8	(2.1-14.9)	330	871 (85th)	34	681 (90th)	377 (90th)	142 (80th)	48 (80th)	0
2021	7.6	(2.0 - 16.9)	581	1534 (92nd)	190	1085 (96th)	710 (96th)	267 (93rd)	77 (89th)	16 (88th)

Summary

- Results from the 2021 survey show that Radley Creek continues to have good numbers of average sized brown trout. Total trout density as well as densities of all adult size classes between 6 and 12 inches ranked in the 88th - 96th percentiles when compared to other trout streams throughout the state of Wisconsin. Catch rates in 2021 increased nearly double compared to the last couple of years and now are closer to the number observed between 2007 and 2013, when total brown trout CPUE averaged 1,401 brown trout per mile of stream. Between 2014 and 2019, total brown trout CPUE averaged only 885 brown trout per mile of stream.
- Brown trout young of year (YOY) density has also increased significantly and are much higher than the past six years. Between 2007 and 2013, brown trout YOY CPUE averaged 232 brown trout per mile of stream. Since 2014, brown trout YOY CPUE averaged only 48 brown trout per mile of stream. Radley Creek is a class I trout stream that is sustained solely by natural reproduction. The increase this past year should help sustain trout populations over the next few years.
- Water temperatures don't appear to be driving the observed declines in brown trout numbers. Water temperatures over the last six years have averaged 53 degrees. One likely cause for the decline is changes in habitat. This area of the state experienced very severe storms approximately 6 years ago that could have resulted in bank erosion and widening and shallowing of the stream as well as trees falling resulting in destabilizing of banks and altering flow. There were also significant shifts in sand due to runoff and elevated flow from strong storm events. Also, catastrophic flooding in March 2019 resulted in significant amounts of sand being deposited in the creek. This summer, the DNR fisheries crew walked along various segments of the creek just upstream and downstream from the WHY 22 trend site and noted that large areas of the stream were getting wide and shallow and some areas had deposits of soft sediments that were knee deep.
- Habitat work completed in the stream throughout the DNR property, where the trend site is located, likely contributes to the historically high numbers of brown trout. Future habitat work including placement of brush bundles in select locations upstream and downstream of HWY 22 should narrow the stream and increase flows, helping flush sand downstream and create deeper water. This will hopefully reverse some of the observed loss of habitat and declines in trout numbers.