Wisconsin Department of Natural Resources

2025 West Branch Red River Watershed Fisheries Summary Report, Shawano County

Photo Credit: Elliot Hoffman - WDNR

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05/12/2026

Executive Summary

In 2025, the Wisconsin Department of Natural Resources (DNR) conducted electrofishing surveys on streams located within the West Branch Red River watershed, located in Shawano County to provide insight and direction for the future management of these waters. Primary sampling objectives of these surveys were to characterize relative abundance and size structure for all trout and overall index of biotic integrity (IBI) based on all fish species present in the sampled stretches. The following report is a summary of trout metrics for all streams within the West Branch Red River watershed and sites surveyed in 2025.

Gamefish Species Sampled

Brook trout (*Salvelinus fontinalis*) is the only stream dwelling trout native to Wisconsin, found predominately in central and northern Wisconsin. Brook trout reside in cold headwater streams and spawn by building a nest called a redd in the fall of the year around November.

Methods

Sampling Schedule

Trend survey sites are sampled biannually in Shawano, and Waupaca Counties. While rotation sites are sampled on a rotational frequency by watershed and will vary by each field office.

Gear

All sampling sites are electrofished with either a towed barge or backpack electrofishing unit depending on the depth and width of a stream. Both gear types were used for the surveys listed in this report.

Site Distances

Sampling distance is at least 35 times the mean stream width or a minimum of 330 feet (100 meters), whichever is greater.

Data Collected

All gamefish are identified to species, measured for length and examined for fin-clips. In at least one survey site per stream, all fish species are collected and counted. If multiple sites are designated for a stream, only one site needs to be sampled for all fish.

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 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.

Survey Effort

During the 2025 survey season the Shawano work unit surveyed the West Branch Red River including the following streams: Gold Creek, Silver Creek, Smith Creek, Kroenke Creek, Gardner Creek, Miller Creek and several unnamed tributaries.

Table 1. Survey site information for streams surveyed in the West Branch Red River Basin by the Shawano work unit in 2025

Stream Name	County	Survey Type	Site Location	Survey Dates	Water Temperature (° F)	Site Length (feet)
Gardner Creek	Shawano	Rotational	CTH VV	8/6/2025	63	545
Gardner Creek	Shawano	Rotational	Butternut Road	8/5/2025	65	380
Gold Creek	Shawano	Rotational	Willow Road East	7/9/2025	56	410
Gold Creek	Shawano	Rotational	Gold Creek Lane	7/9/2025	56	528
Island Creek	Shawano	Rotational	Anderson Road	7/29/2025	65	330
Kroenke Creek	Shawano	Rotational	CTH U	7/28/2025	66	330
Kroenke Creek	Shawano	Rotational	Kroenke Creek Road	7/28/2025	68	364
Kroenke Creek	Shawano	Rotational	Mountain Bay Trail	7/31/2025	60	339

Kroenke Creek	Shawano	Rotational	Hickory Road	7/31/2025	59	508
Miller Creek	Shawano	Rotational	Townhall Road	7/31/2025	62	739
Miller Creek	Shawano	Rotational	Big Lake Road	7/31/2025	62	620
Miller Creek	Shawano	Rotational	CTH G	7/31/2025	62	623
Miller Creek	Shawano	Rotational	Mader Hill Road	8/26/2025	58	448
Miller Creek	Shawano	Rotational	Townhall Road	8/26/2025	60	431
Miller Creek	Shawano	Rotational	Anderson Road	8/26/2025	62	335
Silver Creek	Shawano	Rotational	CTH D	7/9/2025	56	367
Silver Creek	Shawano	Rotational	Silver Creek Road	7/10/2025	57	566
Silver Creek	Shawano	Rotational	Bierman Road	7/9/2025	60	608
Smith Creek	Shawano	Rotational	Camp 14 Road	7/28/2025	65	376
Smith Creek	Shawano	Rotational	Schmidt Lane	7/21/2025	62	330
Unnamed Tributary 330000	Shawano	Rotational	CTH A	7/21/2025	58	365
West Branch Red River	Shawano	Rotational	Red River Road East	7/15/2025	70	833
West Branch Red River	Shawano	Rotational	Spruce Road	7/15/2025	62	1001
West Branch Red River	Shawano	Rotational	Park Avenue	7/21/2025	62	1016
West Branch Red River	Shawano	Rotational	CTH D	7/22/2025	59	976
West Branch Red River	Shawano	Rotational	Red River Road	7/15/2025	66	907
West Branch Red River	Shawano	Rotational	Moh He Con Nuck Road	8/25/2025	60	1306
West Branch Red River	Shawano	Rotational	Boehms Road	8/25/2025	60	1370
West Branch Red River	Shawano	Rotational	Murphy Road	8/25/2025	60	1299

Results

Table 2. Catch metrics per mile for brook trout on rotational sites surveyed in 2025

Stream Name	Site Location	Average Length and Range (inches)	Total and (PCTL)	Young of Year (YOY)	>8" (PCTL)	>10" (PCTL)
Gardner Creek	Butternut Road	7.8 (2.8 - 11.5)	250 (56)	13	111 (89)	41 (94)
Gardner Creek	CTH VV	7.8 (4.3 - 10.4)	145 (44)	-	87 (85)	19 (86)
Gold Creek	Red River Road	5.1 (1.9 - 9.5)	1190 (89)	400	70 (81)	-
Gold Creek	Willow Road	4.7 (1.9 - 9.2)	435 (68)	243	12 (42)	-
Kroenke Creek	CTH U	3.2 (1.9 - 5.7)	698 (79)	619	-	-
Kroenke Creek	Hickory Road	7.1 (3.3 - 9.7)	312 (60)	20	52 (75)	-
Kroenke Creek	Kroenke Creek Road	6.1 (4.2 - 8.2)	362 (64)	-	14 (44)	-
Kroenke Creek	Mountain Bay Trail	4.5 (2.0 - 7.9)	1828 (95)	1234	-	-
Miller Creek	Big Lake Road	7.4 (7.4 - 7.4)	8 (5)	-	-	-
Miller Creek	Townhall Road	6.8 (6.0 - 8.3)	42 (24)	-	7 (34)	-
Silver Creek	Bierman Road	5.8 (1.7 - 10.0)	1391 (91)	278	173 (94)	8.6 (73)
Silver Creek	CTH D	5.6 (2.0 - 9.7)	785 (82)	300	71 (81)	-
Silver Creek	Silver Creek Road	5.7 (1.6 - 11.4)	2233 (96)	588	158 (93)	18 (86)
Smith Creek	Camp 14 Road	5.7 (5.1 - 6.3)	42 (23)	-	-	-
Smith Creek	Schmidt Lane	5.1 (2.2 - 9.9)	777 (81)	333	15 (47)	-
Unnamed Tributary 330000	CTH A	5.3 (2.9 - 7.4)	72 (31)	28	-	-

West Branch Red River	Boehms Road	4.7 (2.2 - 9.2)	694 (79)	316	11 (41)	-
West Branch Red River	CTH D	4.8 (1.9 - 8.7)	1140 (89)	708	10 (40)	-
West Branch Red River	Maple Road	6.0 (2.2 – 11.3)	384 (65)	112	46 (72)	13 (80)
West Branch Red River	Moh He Con Nuck Road	5.7 (2.1 – 10.0)	1000 (87)	218	113 (89)	4 (64)
West Branch Red River	Murphy Road	5.7 (2.2 – 14.9)	353 (63)	105	48 (74)	12 (78)
West Branch Red River	Park Avenue	5.6 (1.7 – 11.3)	953 (85)	484	57 (76)	20 (87)
West Branch Red River	Red River Road	6.6 (2.2 – 11.2)	540 (73)	40	98 (87)	5 (67)
West Branch Red River	Red River Road East	5.7 (1.8 – 11.9)	822 (83)	322	101 (88)	6 (69)
West Branch Red River	Spruce Road	6.1 (1.9 – 10.0)	905 (85)	105	152 (93)	5 (66)

Figure 1. West Branch Red River brook trout length distribution 2025

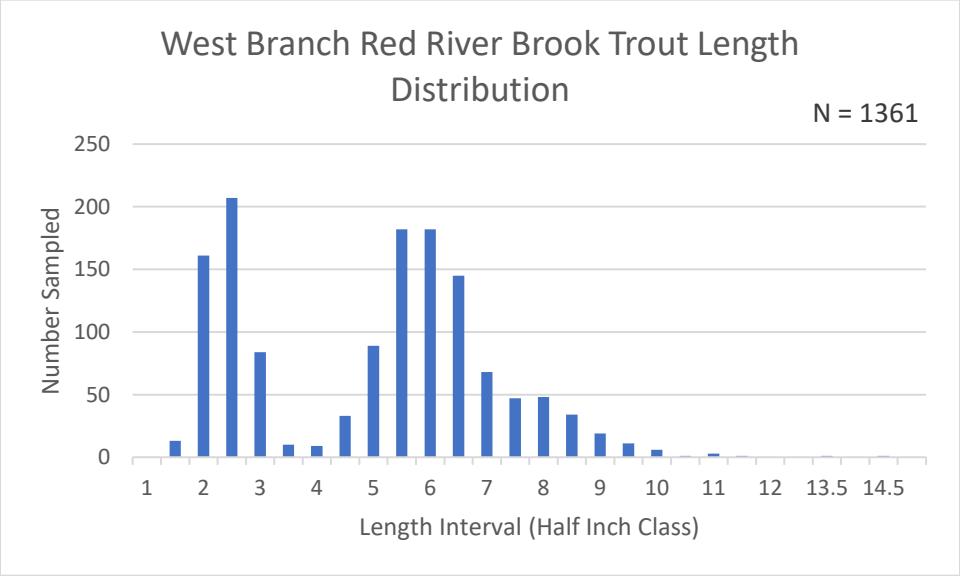


Figure 2. Gardner Creek brook trout length distribution 2025

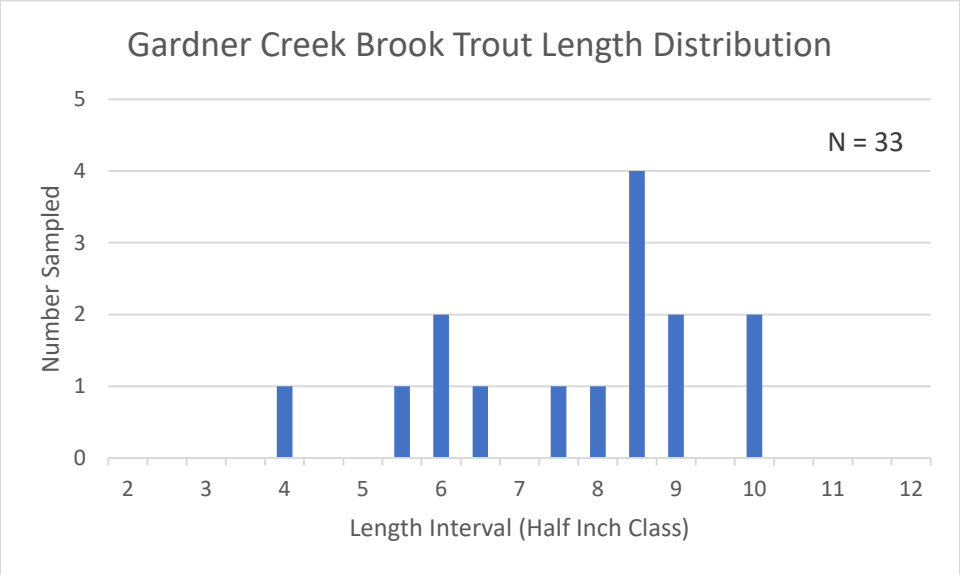


Figure 3. Gold Creek brook trout distribution 2025

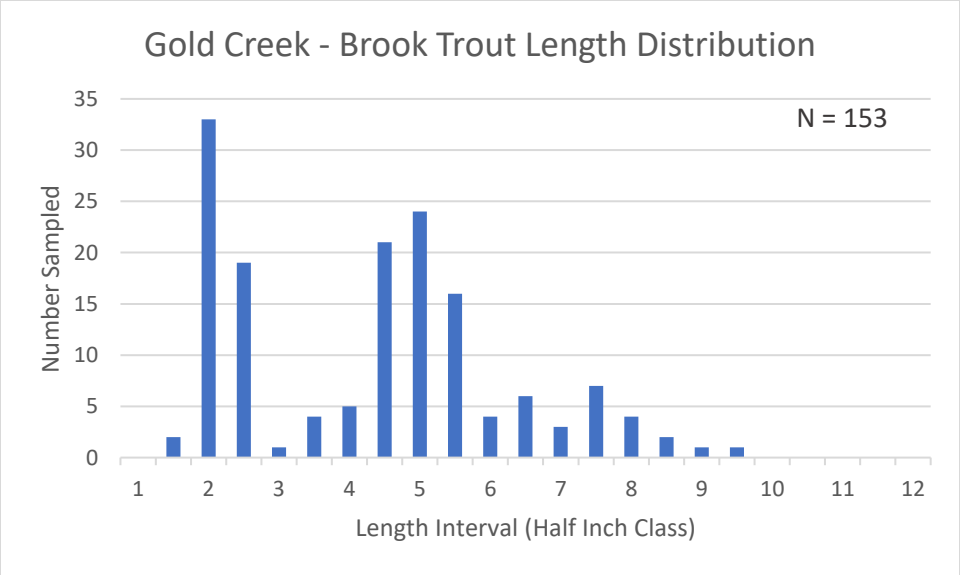


Figure 4. Kroenke Creek brook trout distribution 2025

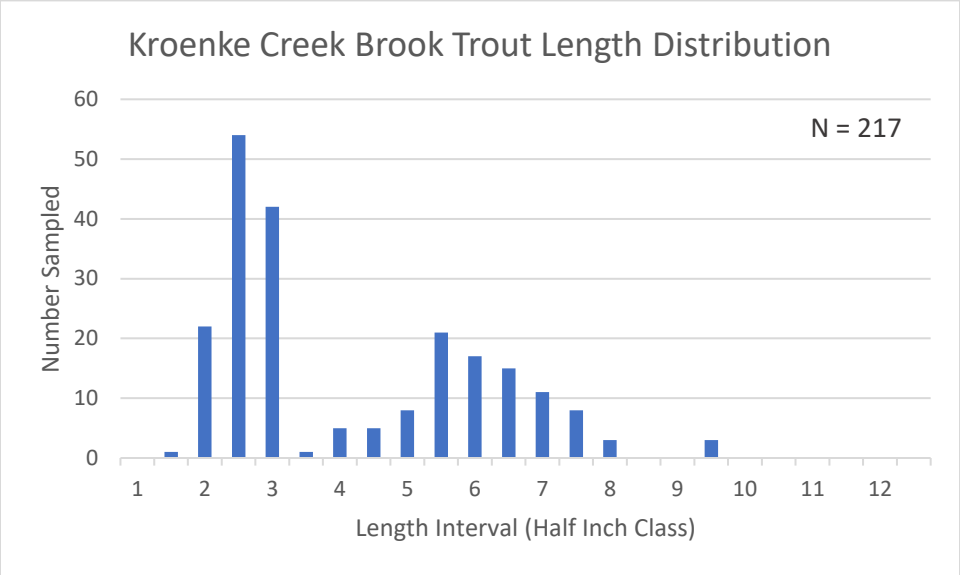


Figure 5. Miller Creek brook trout distribution 2025

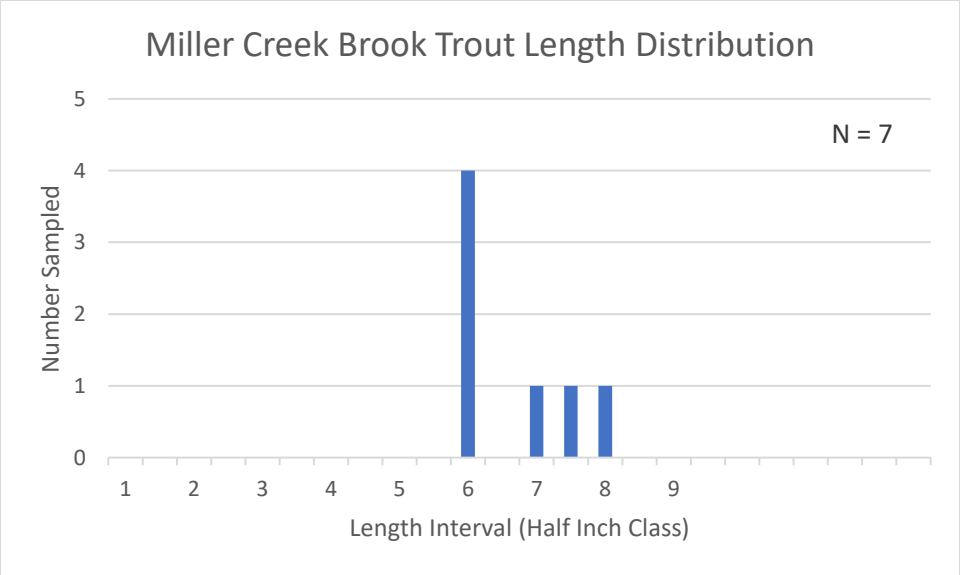


Figure 6. Silver Creek brook trout distribution 2025

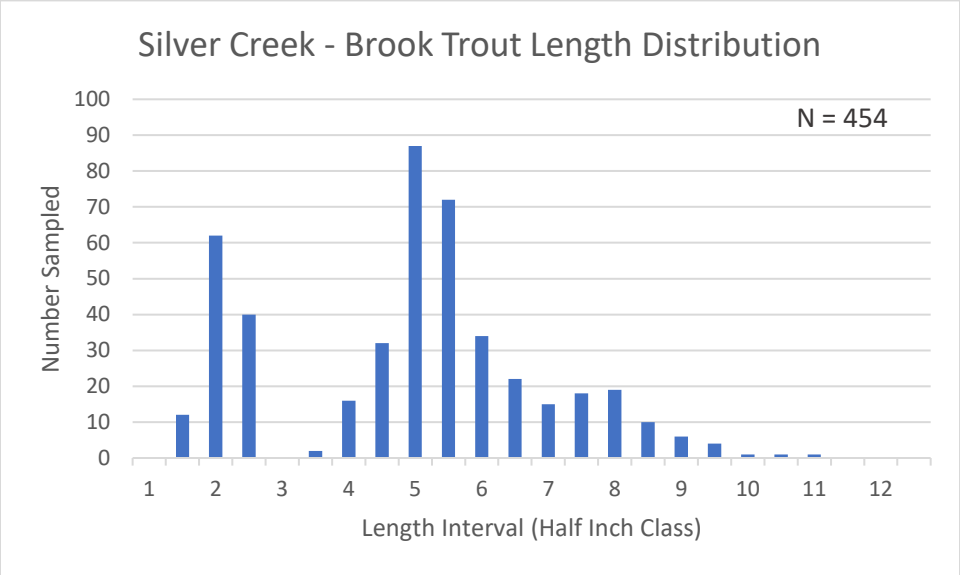
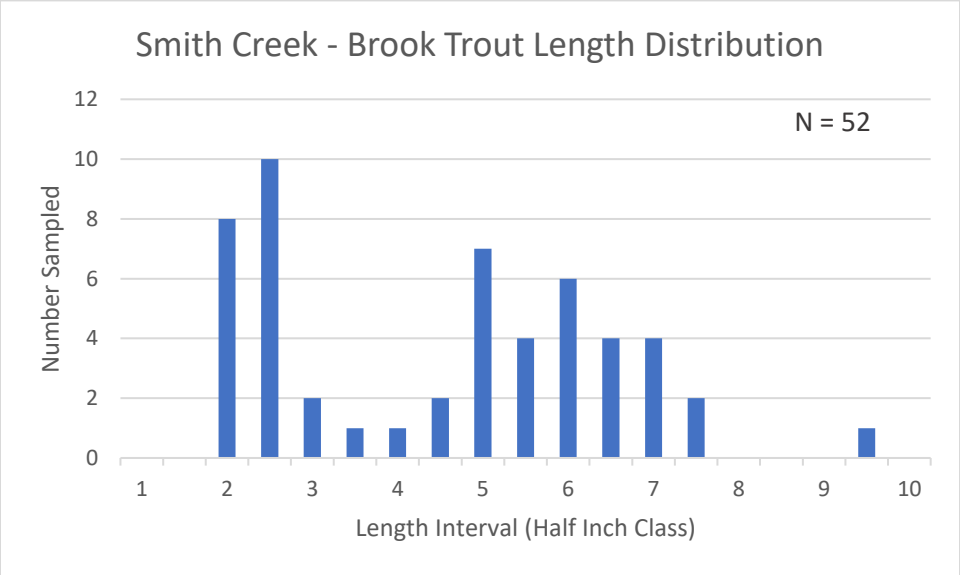


Figure 7. Smith Creek brook trout distribution 2025



Discussion and Summary

The West Branch Red River originates in Langlade County and flows through Shawano County, and a small portion of Menominee County before converging with the Red River upstream of Upper Red Lake, which is created by an impoundment. Lower Red Lake, which is also an impoundment near the Village of Gresham, creates another barrier for fish species within the Red River watershed. The West Branch River consists of 19.3 miles of Class I trout water, before converging with the Red River. The Red River is a Class II trout stream consisting of 22.3 miles and is supported by many

other tributaries. Roughly 20% of land use within the West Branch Red River consists of agriculture, while the remaining landscape consists of wooded and wild landscape. Fishing access on the West Branch Red River consists of 12 road crossings, a 40-acre public parcel connected to a stream bank easement near Boehm Road and a public park in the Village of Mattoon.

Higher water temperatures > 68°F around areas of Upper and Lower Red Lakes during summer months are not conducive to healthy trout populations. Smaller cold-water tributaries provide refuge, spawning habitat, and nursery areas for trout which are supported by two main tributaries below Lower Red Lake. Kroenke Creek, a 7.5-mile Class I and Class II trout stream has the highest densities of YOY (Young of Year) brook trout downstream of the Lower Red Lake dam. Gardner Creek, a cold-water resource downstream of Lower Red Lake dam produces below average numbers of YOY brook trout along with above average numbers of 8–10-inch brook trout. Gardner Creek, a 2.7-mile tributary, has been impacted by local land use practices and a large presence of beaver activity throughout the tributary. Miller Creek, an 8.4-mile Class I trout stream, originates in Menominee County and flows south before flowing into Lower Red Lake. Miller Creek has below average numbers of brook trout, most likely caused by beaver activity. Siltation, warming water temperatures, and lack of cover throughout the stream corridor have caused a decline in the brook trout population. The two dams creating Upper and Lower Red Lake are also most likely having a negative influence on the brook trout. Impassable barriers not allowing the brook trout to seek refuge to colder water temperatures in other areas of the watershed.

Gold Creek, 4.8 miles of Class I trout water, is the most upstream tributary to the West Branch Red River. Gold Creek consists of cold water, gravel substrate, and suitable habitat for several year classes of brook trout. Many other smaller unnamed tributaries contribute to the West Branch Red River watershed. Management concerns for the watershed and the trout populations consist of land use, runoff events, erosion, perched culverts at road crossings and protection of the riparian corridor. Silver Creek, 10.1 miles of Class I trout water, with 45% of the watershed land cover consisting of wooded and wild landscape. Silver Creek has the highest densities of brook trout in the West Branch Red River watershed and has high importance supporting the West Branch Red River fishery. Smith Creek, a 3.1-mile Class II tributary to the Red River is an important cold-water refuge for brook trout during summer months when water temperatures get to warm for brook trout in the Red River.

West Branch Red River brook trout densities total CPUE at seven of the nine sites were higher than the 70th percentile, when compared to statewide data. Six out of the nine sites showed an increase in total CPUE when compared to the 2019 surveys. CPUE for >10.0-inch brook trout were above the 70th percentile at seven of the nine sites in West Branch Red River. Overall, the CPUE of brook trout >10.0 inches have decreased since the 2019 surveys in the West Branch Red River. YOY densities of brook trout were highest in the two of the three most upstream sites, Park Avenue

and River Road. Maple Road has been degraded over time due to cattle grazing near stream, along with undersized and perched culverts. Temperatures ranged from 59 - 70 F° in the West Branch Red River, during the months of July. Temperatures ranged from 58 - 68 F° downstream of the Lower Red Lake in Kroenke Creek, Miller Creek, and Gardner Creek. Above average densities of brook trout were sampled during the survey period of the tributaries downstream of the Lower Red Lake dam. Lack of suitable habitat and higher water temperatures in the Red River are likely dispersing brook trout to colder tributaries such as Gardner Creek and Kroenke Creek.

Two main tributaries which flow into the West Branch Red River upstream of the Upper Red Lake dam are the Silver Creek and Gold Creek. Silver Creek, which is the larger of the two tributaries, showed a slight decrease in total CPUE for brook trout at the Bierman Road and Silver Creek Road sites when compared to previous surveys conducted in 2009 and 2021. Even though there was a slight decrease in CPUE, when compared to other streams in Wisconsin both sites were above the 90th percentile. CPUE of brook trout >8.0 inches in Silver Creek remained stable since surveys conducted in 2009 and 2021. Total CPUE of brook trout in Gold Creek were between the 68th and 89th percentiles when compared to brook trout populations across the state. Furthermore, brook trout CPUE >8.0 inches in Gold Creek were between the 42nd and 81st percentiles when compared to statewide populations. Smith Creek, which is located downstream of the West Branch Red River confluence with the Red River is an excellent spawning and nursery area for brook trout. 2025 was the first year of documented fish surveys on Smith Creek. While brook trout over 9.0 inches were sampled, the importance of this stream is for nursery habitat and spawning area.

Miller Creek, Gardner Creek and Kroenke Creek are three contributing tributaries to the Red River downstream Upper Red Lake dam. Kroenke Creek has shown a slight decrease in total CPUE and >8.0-inch brook trout since surveys conducted in 2021. Total CPUE of brook trout on Kroenke Creek range from 60th – 95th percentile when compared to other brook trout streams throughout Wisconsin. Gardner Creek, which was last surveyed in 2021, has shown a decrease in total CPUE, while there was a slight increase in brook trout >8.0 inches. Although there was a slight decline in total brook trout, for the first time in 49 years brook trout were captured at the CTH VV sampling site. At the two sampling sites of Gardner Creek CPUE >10.0 inches were in the 86th and 94th percentile when compared to other brook trout waters in the state. Gardner Creek is a very small stream which has been able to withstand heavy beaver activity over the years. Beaver activity on this small stretch of stream has silted in much of the streambed, warmed water temperatures and limited movement of brook trout during spawning periods.

West Branch Red River and its connected tributaries have above average brook trout densities and provide an action-based angling opportunity. Opportunities to capture brook trout up to 12.0 inches are possible. Warming water temperatures, impassable barriers and habitat degrading over time are concerns for brook trout in the lower

reaches of the West Branch River and Red River and its' tributaries. Impassable barriers, whether they are dams, or perched culverts can have a negative effect on brook trout populations. Connectivity within watersheds is important for brook trout to allow them to migrate and find colder water, which is critical for brook trout survival.