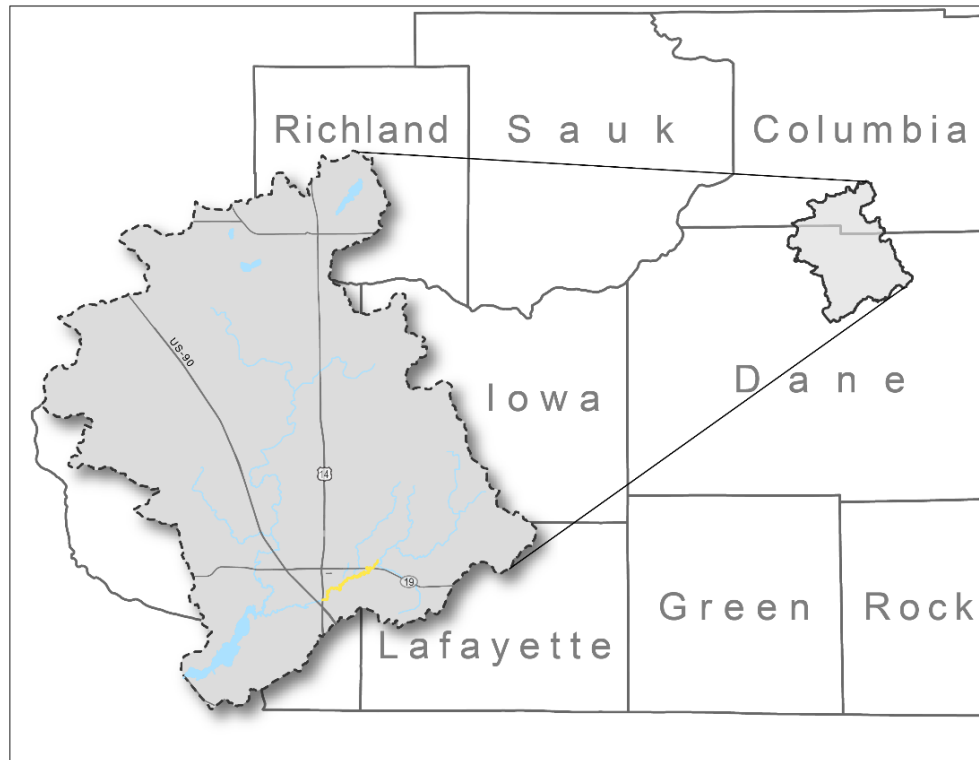


WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Trout Stream Management And Status Report Of

The Upper Yahara River Watershed

Dane County, Wisconsin 2022



Dan Oele

DNR Fisheries Biologist

Mitchell Trow

DNR Fisheries Technician

March 2023



Table Of Contents

Executive Summary.....	3
Introduction.....	5
Methods.....	6
Results.....	8
Discussion	9
Management Recommendations	13
Tables.....	14
Stocking History.....	15
Brown Trout Catch Rates.....	16
Brook Trout Catch Rates.....	17
IBI Scores.....	18
Regional Brook Trout CPUE.....	19
Regional Brown Trout CPUE.....	20
Figures.....	21
Stream Class and Survey Sites.....	21
Regulations Map.....	22
Public Access.....	23
Young-of-Year Brown Trout CPUE.....	24
Yearling Brown Trout CPUE.....	25
Adult Brown Trout CPUE.....	26
Preferred Brown Trout CPUE.....	27

Executive Summary

Streams within the Upper Yahara River watershed detailed in this report include the Upper Yahara River, Token Creek, Harbison Creek and Wheeler Wilcox Creek. Token Creek and Harbison Creek contain classified trout water, while the Yahara River and Wheeler Wilcox Creek are unclassified. The Upper Yahara River and Wheeler Wilcox Creek were surveyed as trout potential sites.

Token Creek is the only stream in this watershed that has been stocked. Early stocking efforts focused on stocking brown trout up until 1990, but over the last three decades Token Creek has regularly received large fingerling and adult brook trout.

Streams were sampled in 2022 (14 stations) using single pass electrofishing following the suspension of stocking to assess natural recruitment and natural reproduction. DNR staff found fishable populations, evidence of limited recruitment and moderate abundances of trout in three of the four streams in the watershed. Increased abundances of adult brown trout and natural recruitment were documented in isolated reaches of Token Creek. The remaining streams had limited recruitment and lower abundances of yearling and adult trout. No trout were observed in Wheeler Wilcox Creek.

Minor adjustments in the trout classifications are recommended. Class II waters of Token Creek should be extended upstream to County Road C. The Upper Yahara River from County Road V downstream to Windsor Road should be upgraded from unclassified to Class II trout waters. Class II trout waters of Harbison Creek should be extended downstream to the confluence with Token Creek. Class III waters of Token Creek below Token Creek County Park Pond should be downgraded to unclassified waters. No adjustments in the trout stream classifications are needed in Wheeler Wilcox Creek (unclassified).

An ongoing threat to the coldwater habitats in this region and watershed is intensive urbanization, which increase sediment and nutrient delivery to trout streams resulting in degraded habitat and reduced trout abundances. Many trout streams in this watershed suffer from a lack of spawning riffles, heavy siltation and limited deep pools for overwintering habitat. In order to improve trout abundances, physical habitat needs improvement, but planning for large construction projects in this watershed can be challenging. Rapid urbanization results in small parcels and few public lands. The soft, hydric soils in many areas create difficult working conditions for large, heavy equipment too.

Management recommendations highlighted in this report include: increase quality recreational fishing opportunities in Token Creek and Upper Yahara River, continue to collaborate with Dane County Parks as well as the villages of Deforest and Windsor to obtain public access, conduct habitat improvement projects to extent feasible with

partner organizations and maintain harvest opportunities with the current regulation of 8 inch minimum, 3 daily bag limit in the watershed.

ACKNOWLEDGEMENTS

Data collection for the 2022 surveys were completed by DNR staff Josh Jonet, Mitchell Trow, Dan Oele and intern Catherine Nguyen. Bryce Linden and Mallory Johnson contributed watershed maps. Claire Gaber, David Rowe and Tim Simonson provided feedback and edits for this report.

WATERSHED LOCATION

Upper Yahara River Watershed including the Upper Yahara River, Token Creek, Harbison Creek and Wheeler Wilcox Creek.

PURPOSE OF SURVEY

WDNR baseline trout rotation and trout potential surveys
Assess trout stream classification
Assess natural reproduction and recruitment
Assess current trout population abundance

DATES OF FIELDWORK

June 27 - August 4, 2022

SPECIES SAMPLED

All fish encountered were collected and recorded including bluegill, bluntnose minnow, brook stickleback, brook trout, brown trout, brown bullhead, common carp, common shiner, creek chub, fathead minnow, golden shiner, green sunfish, johnny darter, largemouth bass, mottled sculpin, northern pike, rainbow trout and white sucker.

Introduction

SUMMARY OF THE WATERSHED

The headwaters of the Upper Yahara River originate near the Dane-Columbia County border and flow south through the villages of Windsor and Deforest, then through Cherokee Marsh and into Lake Mendota. The entire Upper Yahara River is unclassified trout waters. The headwaters of Token Creek begin in Sun Prairie and flow west until it becomes Class II trout waters at the confluence with Culver Springs. The stream continues to flow southwest into the Dane County Parks property at Token Creek Lane. The reaches downstream of Token Creek Lane to U.S. Highway 51 are Class III waters, and the remaining reaches are unclassified. Harbison Creek is a small Class II trout stream that originates in a spring north of State Highway 19 and flows south about one-half mile before its confluence with Token Creek. Wheeler Wilcox Creek is an unclassified, 4.6 mile tributary of the Upper Yahara River draining the western area of the watershed along County Highway I and crosses Interstate 39 before joining the Upper Yahara River.

CURRENT STATUS AND MANAGEMENT HISTORY

Class I trout streams are those with high quality habitat with sufficient levels of natural reproduction to sustain the fishery and no stocking is required. Class II streams are those in which some natural reproduction occurs, but not enough to utilize all available food and space, and stocking is required to maintain a desirable fishery. Class III streams are those in which trout habitat is marginal with no natural reproduction occurring and requires stocking of catchable sized trout to provide a fishing opportunity for trout. Token Creek has Class II and Class III trout waters, Harbison Creek is Class II with the lower reaches being unclassified and the Upper Yahara River and Wheeler Wilcox Creek are unclassified (Figure 1). Originally, Token Creek was managed as a brown trout fishery with brown trout being stocked up until 1990. Another brown trout stocking occurred in 1996, but stocking switched to brook trout in the early 2000s with hope that brook trout could establish a naturally reproducing population after a dam removal near Portage Road. Token Creek is currently the only stream that has received regular stocking (brook trout, Table 1).

HABITAT IMPROVEMENT

Wisconsin Department of Natural Resources (DNR) habitat projects in this watershed have focused on Token Creek. Activities include riparian brushing projects, assisting in the dam removal, in-stream habitat improvements and improving hydrologic function in the headwaters. Multiple organizations including Dane County and DNR collaborated to improve the ecological condition of Harbison Creek by removing a water control structure, draining ponds, reconnecting the stream threads and remeandering the stream. Dane County has improved Token Creek hydrology and in-stream habitat within their Dane County Parks system and has purchased several parcels in the watershed, thereby reducing the future development of the area in key locations along the stream corridor.

Token Creek Habitat Restoration

Token Creek has a rich history beginning around 1860 when a grist mill and dam was built just east of Portage Rd to support local wheat farmers. Historically, Token Creek was managed for brown and rainbow trout by stocking fish below the dam from 1972 to 1990. Over time the 44-acre millpond began to show its age by suffering from high sediment loads, low dissolved oxygen levels and increased water temperatures. By 1990, DNR fish surveys revealed that Token Creek was more suitable for warm water species like common carp, green sunfish and white suckers. Token Creek began to have low trout survival rates due to poor water quality coming from the millpond, so stocking was discontinued in 1990. In 1994, the Token Creek dam structure began to fail due to a large flood, so water levels on the millpond were drawn down. This led to the discovery of a large spring complex, locally known as Culver Springs, which contributes 50-degree water to Token Creek year-round.

In 1996, the DNR, Dane County Parks, town of Windsor and Trout Unlimited collaborated to plan a Token Creek stream restoration project on a 6-mile stretch of stream between County Road C and U.S. Highway 51. This project involved removing the deteriorating dam, installing silt traps, stabilizing banks and remeandering the stream back to the natural stream channel. Post dam removal, Token Creek has shown water quality improvements like increased dissolved oxygen, increased flow and decreased water temperatures that are much more suitable for trout. Improved water quality characteristics in Token Creek shifted DNR trout stocking efforts from brown trout to brook trout, which have been stocked annually since 2005.

REGULATIONS

All of the trout streams in this watershed are regulated under the standard county-wide 8 inch minimum, 3 fish daily bag limit for trout (Figure 2).

PUBLIC ACCESS

The best public access for trout angling is along DNR owned lands at Token Creek near Portage Road and the Dane County owned lands on Token Creek east of U.S. Highway 51 within Token Creek County Park. The village of Windsor owns riparian lands along the Upper Yahara River and Token Creek as well. Additional angling access can be attained at road right-of-way crossings and other public access features (e.g. parks, local government lands, Figure 3).

Methods

Understanding the natural reproduction capacity and recruitment of a stream is critical to managing trout populations. In our fishery assessments, natural recruitment is defined by juvenile fish surviving to age-1. Natural reproduction is the presence of age-0 fish (young-of-year, YOY), and they are difficult to accurately assess since their vulnerability to electrofishing gear is more variable than larger

sized fish. Additionally, YOY are not evenly distributed since they often occur upstream in nursery habitats and migrate downstream to adult and juvenile habitats later in life. Therefore, documenting the lack of natural reproduction does not mean there is a necessarily a complete lack of natural recruitment.

To assess recruitment to age-1, all stocking of fingerling trout was suspended the year prior to these surveys. Our assumption was that all yearling (age-1) trout are from natural recruitment somewhere in the watershed, and all YOY (age-0) trout are from natural reproduction. If previous stocking occurred, age-2 and older fish are assumed to be from mixed sources. High levels of natural reproduction, natural recruitment and several age classes without stocking are indicative of self-sustaining Class I waters. We infer put-and-grow stocking was effective if we observe an absence or low abundance of yearling trout but an abundance of adult trout. Given these conditions, we conclude a stream should be classified as Class II. Marginal waters where only stocked fish survive during early spring and summer with limited carry-over and no reproduction are Class III.

DNR staff surveyed four stations in the Upper Yahara River, four in Token Creek, two in Harbison Creek and four in Wheeler Wilcox Creek (see Figure 1 for map of sample locations). All 14 stream sites were surveyed with either a tow behind barge stream shocking unit or backpack electrofishing unit.

The number of fish sampling sites in a particular stream was dependent on the length of stream following DNR Fish Management Handbook protocols. One sampling site is required for stream segments less than 1.5 miles, two sites for stream segments 1.5-3 miles and one site every three miles on long rivers (minimum 3 sites). The length of each fish survey at a particular site is determined by stream width: thirty-five times the mean stream width on segments greater than 3 meters and 100 meters minimum for streams less than 3 meters wide.

For each sampling site, we calculated the catch-per-unit-effort (CPUE) by dividing the number of fish collected by the length of the survey, yielding a trout per mile estimate. This procedure allows for straightforward analyses of catch rates within and among stream sites, as well as standardized regional and statewide comparisons. Fish length data were analyzed by size classes and age groups of interest. These groups included the number of age-0 (YOY), age-1 yearlings and adult trout (age-2+). YOY are fish less than 4 inches in length, yearlings are between 4 and 7.9 inches for brown trout (4-7 inches for brook trout) and adults are considered greater than 8 inches for brown trout (>7 inches for brook trout). Preferred sized fish are often of special interest to anglers and are fish greater than 12 inches for brown trout (>10 inches for brook trout).

All fish encountered during the survey were collected. For all trout, we recorded the species and total length (nearest tenth of an inch); other species were counted to calculate the coldwater index of biotic integrity (IBI) score (0-100). For added context,

catch rates of mottled sculpin (intolerant of poor water quality and a coldwater indicator species) and white sucker (tolerant of poor water quality and warmer water indicator species) were also evaluated as a proxy for long-term water temperature and habitat condition at each survey station. DNR Fisheries Management Handbook chapter 510 details each of the sampling protocols in greater detail. All fish were returned to the stream.

Water quality and habitat metrics were also collected at each survey site. Streamflow (cubic feet per second, CFS) was calculated at one cross-sectional transect at each site using a HACH FH950 handheld flow meter. Temperature, dissolved oxygen, specific conductivity and pH are also measured using a handheld YSI Pro 2030 meter. Stream habitat metrics were collected using a DNR qualitative habitat rating form. For streams less than 10 m wide, ratings included riparian buffer width, bank erosion, pool area, width: depth ratio, riffle: riffle or bend: bend ratio, fine sediments and cover for fish. For streams greater than 10 m wide, ratings include bank stability, maximum thalweg depth, riffle: riffle or bend: bend ratio, rocky substrate and cover for fish. All data is recorded digitally using weatherproof handheld Toughbook™ laptops and a custom software application.

Results

DNR staff sampled 14 sites covering four different streams within the Upper Yahara River watershed during the summer of 2022. Out of the 14 sites, brown trout were collected at nine sites (Figure 1, Table 2) and brook trout were collected at four sites. No trout were found in Wheeler Wilcox Creek.

Natural reproduction of brown trout was found at three of the 14 sites sampled within the watershed. Brown trout YOY (<4 inches) were only found in Token Creek and Harbison Creek. The average catch rate of YOY fish sampled across all sites was 5 fish per mile (Table 2). These populations are below the Southeast Glacial Till Plains region and statewide medians. No evidence of natural reproduction was found in the Upper Yahara River.

Compared to YOY, yearling (4-8 inches) catch rates for brown trout across the watershed showed modest abundances with yearling brown trout being found at six of out 14 sites. The average catch rate of yearling fish sampled across all sites was 44 per mile. Token Creek at Portage Road was the only location with yearling catch rates that exceed Southeast Glacial Till Plains region and statewide medians. All other stations were well below regional benchmarks with eight stations recording zero yearlings (Figure 5). The highest catch rates for yearling brown trout were at the Token Creek at Portage Road station (375 per mile) and Harbison Creek closer to the confluence with Token Creek (126 per mile, Table 2).

Adult brown trout larger than 8 inches were observed at eight of the 14 stations. The average catch rate of adult brown trout (>8 inches) sampled across all sites was 45

per mile. Adult brown trout (>8 inches) in Token Creek at Portage Road had a catch rate of 299 per mile, which is well above the Southeast Glacial Till Plains region and statewide medians. Four stations on the Upper Yahara River and one station on Harbison Creek also had adult brown trout, but were below regional benchmarks (Table 2, Figure 6).

Adult fish larger than 12 inches or preferred brown trout were observed at seven of the 14 stations and were only found in the Upper Yahara River and Token Creek. Token Creek at Portage Road and Upper Yahara River at River Road station catch rates exceeded the Southeast Glacial Till Plains and statewide medians for this size category with CPUEs of 76 and 65 fish per mile, respectively (Table 2).

A modest number of brook trout were observed in Token Creek and Harbison Creek, but all catch rates were well below regional and statewide benchmarks for all size classes (Table 3). The highest rates of brook trout natural reproduction were observed in the middle reaches of Harbison Creek and the headwaters of Token Creek near County C.

COLDWATER INDEX OF BIOTIC INTEGRITY SCORES AND HABITAT QUALITY

Median coldwater IBI scores across all sites were very low: only 15 out of 100 and an average score of 29. Average qualitative habitat rating for the watershed was 59 (out of 100). Average riparian buffer scores were good (10 out of 15). Bank erosion scores were acceptable, but nearly all stations had some erosion issues (range 5-15 out of 15, average 9). Adequate habitats defined as pool area were acceptable with a median score of 7 and a max score of 10 (out of 15). Median scores for other physical habitat metrics showed similar degraded patterns including width: depth ratio (7 out of 15), riffle habitat (7.5 out of 15) and fine sediments present (7.5 out of 15). The watershed scored highest for cover for fish with an average score of 12.5 (max score 15). Average temperature across all stations was 61°F (ranged 52°F to 68.7°F). Average stream flow was 7.15 CFS (ranged 1.41 – 85.81 CFS) with an average width of 4.5 meters (Table 4).

Discussion

Recruitment in the watershed is very low, too low to expect a robust fishery in most reaches of the watershed at this time. None of the stations we surveyed met or exceeded regional benchmarks for YOY recruitment. For example, the highest performing station was still nearly three times less than the statewide median. It is likely there are other higher performing YOY reaches we didn't survey, but it is clear the YOY recruitment is not high enough to populate most reaches of the Upper Yahara River or Token Creek. Low YOY abundance translated into low yearling survival and total adult catch rates that did not meet regional benchmarks in all but

two stations surveyed: one in Token Creek (Portage Road) and one in the Upper Yahara River (River Rd.).

Though the watershed has generally low trout abundances, three of the four streams support fishable populations where anglers can expect to catch a trout (>50 adults per mile). The highest performing stream in this assessment was Token Creek (Portage Road station), but the Upper Yahara River and Harbison Creek also contained fishable populations for brown trout.

Water temperatures are not the limiting factor regulating the trout population. The average stream temperature was 61°F, well within a brown trout's thermal tolerance. Even colder, with average temperatures of 54.6°F, the small spring creek of Harbison Creek was cold enough with good water quality to support brook trout. Though cold water is the key ingredient of a trout fishery, the watershed lacks other important habitat features necessary for a healthy trout population.

Important in-stream habitat features in the watershed need improvement for the watershed to support increased trout abundances. All of the streams scored low for width:depth ratios (streams too wide and shallow), lack of pool area, and had too much fine sediment accumulation. For example, the average width:depth ratio score was 7, and none scored over 10 (out of 15). All of the stations had pool area scores less than or equal to 10 (max 15) with an average score of 6. The average score for fine sediments present was also low (average score 6 out of max 10), and 36% scored the lowest possible score of zero in this category, indicating heavy silts dominated the substrate in those reaches.

Habitat improvement projects designed to restore stream bank and trout habitat can increase habitat diversity and will aid in increasing trout abundances. Conservation practices including bank sloping and riparian plantings of native shrubs, grasses and trees can help reduce erosion and fine sediment accumulation. With the shade they provide, planting native trees, grasses and shrubs along trout streams helps keep water temperatures cold.

In-stream habitat additions designed to create diverse riffle, pool and run habitats to accommodate a diversity of aquatic life, including trout, at multiple life stages should be a mainstay of any new habitat work. For example, this report details low YOY production and survival. Careful placement of rock weirs and boulders will diversify the flow patterns and encourage scouring of cobble substrates, which should increase spawning habitat. Young trout need to emerge from well-oxygenated cobble in their redds and find food and shelter in aquatic vegetation or complex habitats. Installing features like brush bundles and downed trees will allow young trout to escape predation and should increase yearling survival. Adult trout will benefit from large, downed wood, root wads and escape logs. These additions provide preferred habitat in deeper habitats with overhead cover where adult trout feel safe and have easy access to food resources.

However, the heavily urbanized watershed contains soft, hydric soils and presents substantial challenges to completing trout improvement projects here. An urban landscape also complicates the processes involved in acquiring public easements needed for this type of work. Instead of securing enough public access targeting one riparian owner in rural streams, urban streams can require dozens of agreeable landowners to engage in new easements to conduct new habitat projects in small, complicated parcels with diverse infrastructure. Even along existing public lands and easements in this watershed, the corridors are narrower, the permitting requirements more complicated and the costs are greater due to finite space to operate in isolated urban patches.

The current lands in public access or ownership are dominated by low-lying, low-gradient, hydric, poorly draining soils. This combination of factors is extremely challenging to work in with heavy equipment that is likely to become stuck, except in extremely cold winters. Excavation required to add trout habitat features will likely need to be targeted during the coldest months and smaller in scale using alternative approaches. These include installing large brush bundles to improve in-stream and riparian habitat rather than bank sloping and installing woody cover with heavy machinery during summer months. The challenges are not insurmountable, but will require additional planning, partnerships and increased funding.

Extensive stocking of large fingerling brook trout in Token Creek has not provided high quality angling opportunities in this watershed. The highest catch rates for adult sized fish barely met the definition of a fishable population, and only at the Highway 19 station on Harbison Creek (63 per mile). No fish over 10 inches were observed in the survey. Further, natural recruitment rates were not capable of increasing yearling or adult abundances much more. Therefore, brook trout will not be stocked in Token Creek. Large fingerling brown trout should be stocked to improve adult abundances in poor performing, high-angler use reaches within the Dane County Park and along DNR lands at Portage Road.

Harbison Creek has a temperature profile and habitat that may still be able to support brook trout, however, previous brook trout stocking has not increased adult abundances and has not provided a quality angling opportunity. Brook trout stocking will be discontinued as brown trout are likely to displace stocked brook trout. Future assessments should evaluate the survival of remaining brook trout and look for evidence of brook trout natural reproduction.

The Upper Yahara River has diverse combinations of riffle, run, and pool habitats within the middle sections of the stream that may allow brown trout to naturally complete an entire life cycle. Future watershed assessments should check for the presence of yearling brown trout and look for evidence of brown trout natural reproduction. If future assessments in the Upper Yahara River continue to show low YOY and yearling brown trout abundances, future brown trout stockings may occur.

Our fieldwork and analyses revealed that minor adjustments in the trout classifications are needed. Class II waters of Token Creek should be extended upstream to Highway C. The Upper Yahara River from County Road V downstream to Windsor Road should be upgraded to Class II trout water. Class II waters of Harbison Creek should be extended down to the confluence with Token Creek making the entire stream classified trout water. Class III waters of Token Creek below Token Creek Lane in Token Creek County Park should be downgraded to declassified waters. Wheeler Wilcox Creek is appropriately unclassified at this time.

In addition to physical habitat stressors caused by urban and agricultural pressures, along with climate change, invasive species like New Zealand mudsnails continue to colonize Wisconsin's trout streams. Established populations have been found in nearby Badger Mill Creek and the Sugar River. Research and monitoring are underway to determine any impacts new invaders like mudsnails pose to the trout fishery and ecology of the stream. Anglers and paddlers need to be mindful of transporting these organisms between waterways when recreating. Freezing gear or robust disinfecting protocols (Vircon, steam, freeze) are the best ways to be sure gear is free of aquatic invasive species between trips.

Management Recommendations

Recommendation 1:

- 1) **Goal** – Increase recreational fishing opportunities for adult (>8 inches) and preferred (>12 inches) sized trout in Token Creek.
- 2) **Objectives**
 - a) Increase adult trout (>8 inches) CPUE >200/mile (SE Glacial Till Plain median is 183 per mile).
 - b) Increase preferred size trout (>12 inches) CPUE >40/mile (Statewide median is 48 per mile).
- 3) **Strategy** – Maintain high quality trout habitats instream and along riparian corridors while promoting increased angler access to extent feasible along publicly accessible lands and easements.
 - a) To extent feasible, invest Trout Stamp habitat funds to conduct a ¼ mile of habitat improvement projects in publicly accessible lands/easements before next survey rotation.
 - b) Discontinue stocking large fingerling brook trout and start stocking large fingerling brown trout.
 - c) Stock surplus hatchery fish (when available) along publicly accessible, high angler use reaches in Token Creek.

Recommendation 2:

- 1) **Goal** – Increase public access to trout streams in urban Dane County.
- 2) **Objectives** – Acquire new public access in the watershed.
- 3) **Strategy** – Continue to support Dane County and the villages of Deforest and Windsor when acquiring new public lands along Upper Yahara River, Token Creek, Harbison Creek and several unnamed tributaries to Token Creek.

Additional Management Recommendations:

- 1) Trout classification modifications:
 - a) Upgrade unclassified trout waters of Token Creek downstream of County Road C to Class II trout waters. Headwaters upstream of County C should remain unclassified.
 - b) Upgrade unclassified trout waters of the Upper Yahara River between County Road V and Windsor Road to Class II trout waters.
 - c) Upgrade unclassified trout waters of Harbison Creek by extending Class II trout waters all the way downstream to the confluence with Token Creek.
 - d) The existing Class II reaches of Token Creek and Harbison Creek are appropriately designated as Class II trout waters.
 - e) Wheeler Wilcox Creek does not currently support trout and is appropriately unclassified trout water at this time.
 - f) Downgrade Class III reach of Token Creek in Token Creek County Park below the millpond to unclassified trout water.
- 2) Maintain harvest opportunities with current regulation of 8 inch minimum, 3 fish daily bag limit in the watershed.
- 3) Increase recreational fishing opportunities for adult (>8 inches) and preferred (>12 inches) sized brown trout in the Upper Yahara River by continuing to support Dane County and local municipalities in obtaining new publicly accessible lands.

Tables and Figures

Table 1. Trout stocking in Upper Yahara River Watershed 2015-2022.

Stream	Species	Age	2015	2016	2017	2018	2019	2020
Token Creek	Brook	Large Fingerling Adult	2915 50	1000	450 300	500	5329 50	500 50

Table 2. Brown trout catch rates in for the Upper Yahara River watershed during the 2022 assessment. Catch Per Unit Effort (CPUE) units are numbers of fish per electrofishing mile of young-of-year (YOY), yearlings and adults of various sizes. Values shown in red indicate catch rate below Statewide median CPUE.

Stream	Station (ID)	N fish	Mean Length (in)	<4" YOY CPUE	4-8" Yearling CPUE	>8" Adult CPUE	>12" Preferred CPUE	>15" Memorable CPUE	>18" Trophy CPUE	Total CPUE
Upper Yahara River	Stream Average	13	12.06	0.00	17.15	53.38	29.37	1.39	1.58	70.54
	Windsor Rd. (1)	4	10.55	0.00	8.25	24.76	16.51	0.00	0.00	33.01
	River Rd. (4)	39	9.87	0.00	60.35	135.79	65.38	0.00	0.00	196.14
	South St. (3)	4	15.10	0.00	0.00	25.24	18.93	0.00	6.31	25.24
	HWY V (2)	5	12.72	0.00	0.00	27.75	16.65	5.55	0.00	27.75
Token Creek	Stream Average	27	9.23	1.92	96.42	92.59	29.39	9.57	1.92	190.93
	Dane County Park (8)	1	12.10	0.00	0.00	5.28	5.28	0.00	0.00	5.28
	Token Creek Lane (6)	15	11.92	0.00	10.19	66.21	35.65	15.28	0.00	76.39
	Portage Rd. (7)	89	8.74	7.66	375.51	298.88	76.64	22.99	7.66	682.06
	HWY C (5)	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Harbison Creek	Stream Average	14	5.97	31.28	83.88	26.30	0.00	0.00	0.00	141.46
	HWY 19 (10)	8	4.81	41.53	41.53	0.00	0.00	0.00	0.00	83.06
	1/2 to confluence (9)	19	7.12	21.04	126.22	52.59	0.00	0.00	0.00	199.85
Wheeler Wilcox Creek	Stream Average	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	River Rd. (13)	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Easy St. (12)	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Hickory Lane (11)	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cuba Valley Rd. (14)	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Statewide Median CPUE				119	199	206	48			537
SE Glacial Till Plains Median CPUE				113	239	183	57			177

Table 3. Brook trout catch rates for Token Creek and Harbison Creek. Catch Per Unit Effort (CPUE) units are numbers of fish per electrofishing mile of young-of-year (YOY), yearlings and adults of various sizes. Values shown in red indicate catch rate below Statewide median CPUE.

Stream	Station (ID)	N fish	Mean Length (in)	<4" YOY CPUE	4-7" Yearling CPUE	>7" Adult CPUE	>10" Preferred CPUE	Total CPUE
Token Creek	Stream Average	2	5.61	33.88	0.00	19.16	0.00	53.04
	Dane County Park (8)	0	0.00	0.00	0.00	0.00	0.00	0.00
	Token Creek Lane (6)	0	0.00	0.00	0.00	0.00	0.00	0.00
	Portage Rd. (7)	5	8.50	0.00	0.00	38.32	0.00	38.32
	HWY C (5)	4	2.73	67.76	0.00	0.00	0.00	67.76
Harbison Creek	Stream Average	11	5.63	36.48	41.60	31.56	0.00	109.63
	HWY 19 (10)	9	7.17	21.04	10.52	63.11	0.00	94.67
	1/2 to confluence (9)	12	4.09	51.91	72.68	0.00	0.00	124.59
SE Glacial Till Plains Median CPUE				61.4	112.7	92	27.3	177
Statewide Median CPUE				148	156	85	18	336

Table 4. Coldwater index of biotic integrity (IBI) scores, water temperature (Temp.), flow (cubic feet per second), stream width and habitat ratings for the Upper Yahara River watershed.

Stream	Station (ID)	IBI	Temp. (°F)	Mean Stream Width (meters)	Flow	Habitat Score
Upper Yahara River	Windsor Rd. (1)	10	61.50	7.00	15.54	62.00
	River Rd. (4)	30	67.60	5.60	9.18	82.00
	South St. (3)	10	66.00	4.40	8.83	52.00
	HWY V (2)	10	63.70	5.50	8.83	48.00
Token Creek	Dane County Park (8)	10	64.70	8.30	20.84	48.00
	Token Creek Lane (6)	30	56.60	7.20	N/A	65.00
	Portage Rd. (7)	50	60.00	5.40	11.30	85.00
	HWY C (5)	60	68.70	4.00	1.41	25.00
Harbison Creek	HWY 19 (10)	90	52.90	2.20	2.12	85.00
	1/2 to confluence (9)	80	56.30	3.10	5.24	72.00
Wheeler Wilcox Creek	River Rd. (13)		61.00	4.50	2.47	65.00
	Easy St. (12)	10	61.30	2.30	2.47	47.00
	Hickory Lane (11)	0	57.20	2.40	1.41	38.00
	Cuba Valley Rd. (14)	0	56.40	1.70	1.41	53.00

Table 5. Brook trout CPUE (fish/mile) percentile breakdown for stream surveys conducted on Class I trout streams in the Southeast Glacial Till Plains and statewide where at least one trout was collected, 2012-2021.

	CPUE TOTAL (All sizes)		CPUE AGE-0 (<4.0 ")		CPUE AGE-1 (4.0-6.9 ")		CPUE ADULT (≥7 ")		CPUE PREFERRED (≥10 ")	
PERCENTILE	SE Glacial Till Plain	Statewide	SE Glacial Till Plain	Statewide	SE Glacial Till Plain	Statewide	SE Glacial Till Plain	Statewide	SE Glacial Till Plain	Statewide
10	12	22.9	12.1	16.1	12.3	16.1	13	15.3	14.7	5.7
25	38.1	96.6	29.3	45.3	32.2	48.3	32.2	32.2	16.1	10.3
35	87.6	174.7	32.2	72.4	38.8	80.5	48.3	48.3	19.3	12.8
50 (median)	177	336.8	61.4	145.3	112.7	149.2	92	80.5	27.3	16.4
65	392.9	579.7	147.6	241.4	215.7	257.2	150	129.4	32.2	27.5
75	633.9	772.5	217.3	365.5	305.8	366.7	234.7	185.2	45	37.4
90	1049	1488.4	452.2	812.3	539.6	662.7	362.7	344	79.3	64.4

Table 6. Brown trout CPUE (fish/mile) percentile breakdown for fishery surveys conducted on Class I trout streams in the Southeast Glacial Till Plains and statewide where at least one trout was collected, 2012-2021.

	CPUE TOTAL (All sizes)		CPUE AGE-0 (<4.0 ")		CPUE AGE-1 (4.0-7.9 ")		CPUE ADULT (≥ 8 ")		CPUE PREFERRED (≥12 ")	
PERCENTILE	SE Glacial Till Plain	Statewide	SE Glacial Till Plain	Statewide	SE Glacial Till Plain	Statewide	SE Glacial Till Plain	Statewide	SE Glacial Till Plain	Statewide
10	172.4	39.7	14.3	12.5	48.3	21	48.3	18.9	13.8	10.6
25	291.2	178.4	34.5	32.2	114.4	70.6	96.6	63.8	26.3	20.3
35	377.2	305.9	64.4	58.1	160.9	115	131.5	112.7	32.2	30.3
50 (median)	558.5	537.3	112.7	119.3	239.1	199.2	183	205.8	56.5	47.6
65	846.7	880.6	263.3	247.5	324.6	337.2	275.5	341.9	84.3	72
75	1042.2	1241.7	356.4	402.1	419.4	482.8	400.4	479.2	93.3	91.4
90	1739.5	2203.1	708.1	933.5	651.1	836.6	682.8	864.5	134.3	156.5

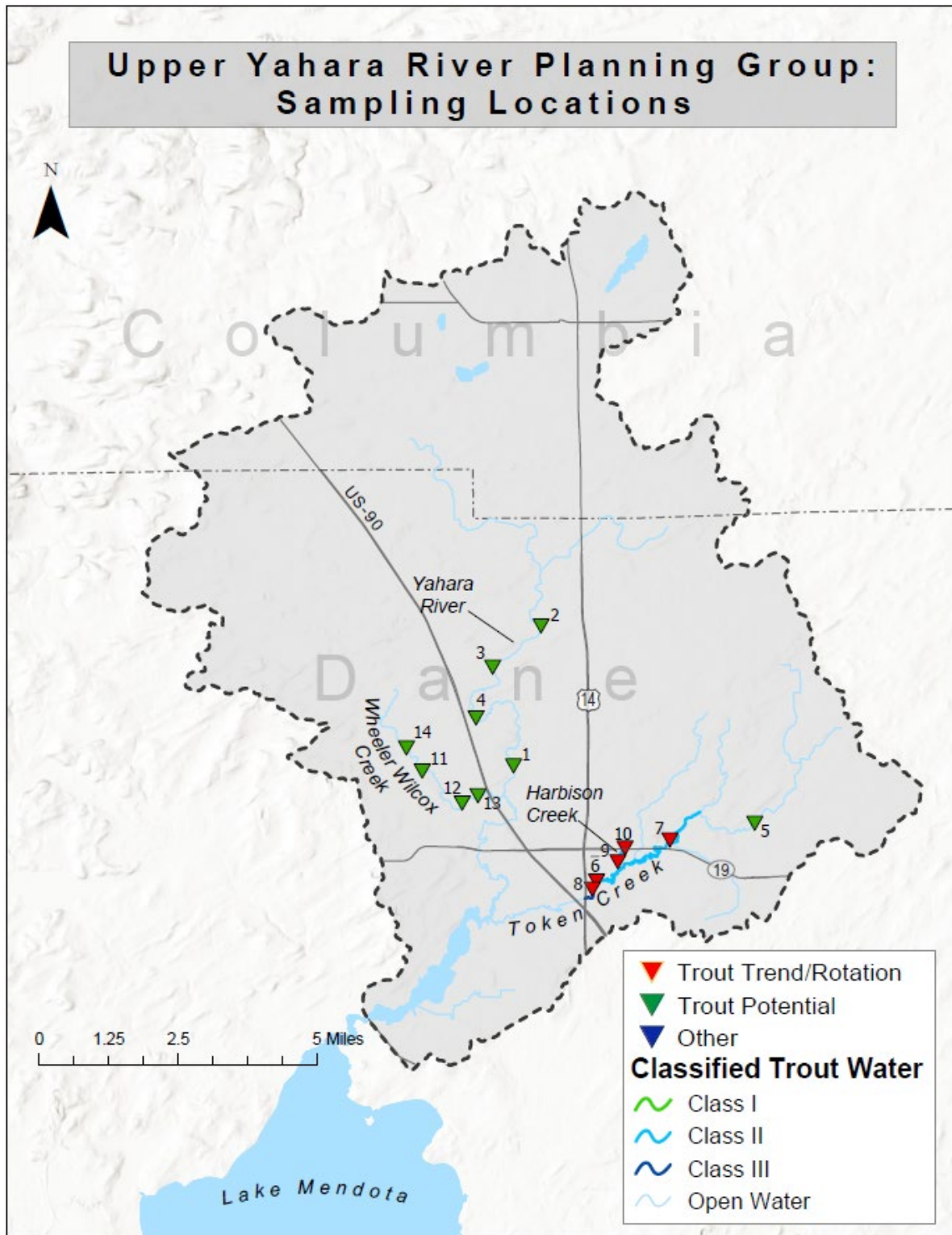


Figure 1. Stream classifications and fishery assessment survey sites within the Upper Yahara River Watershed.

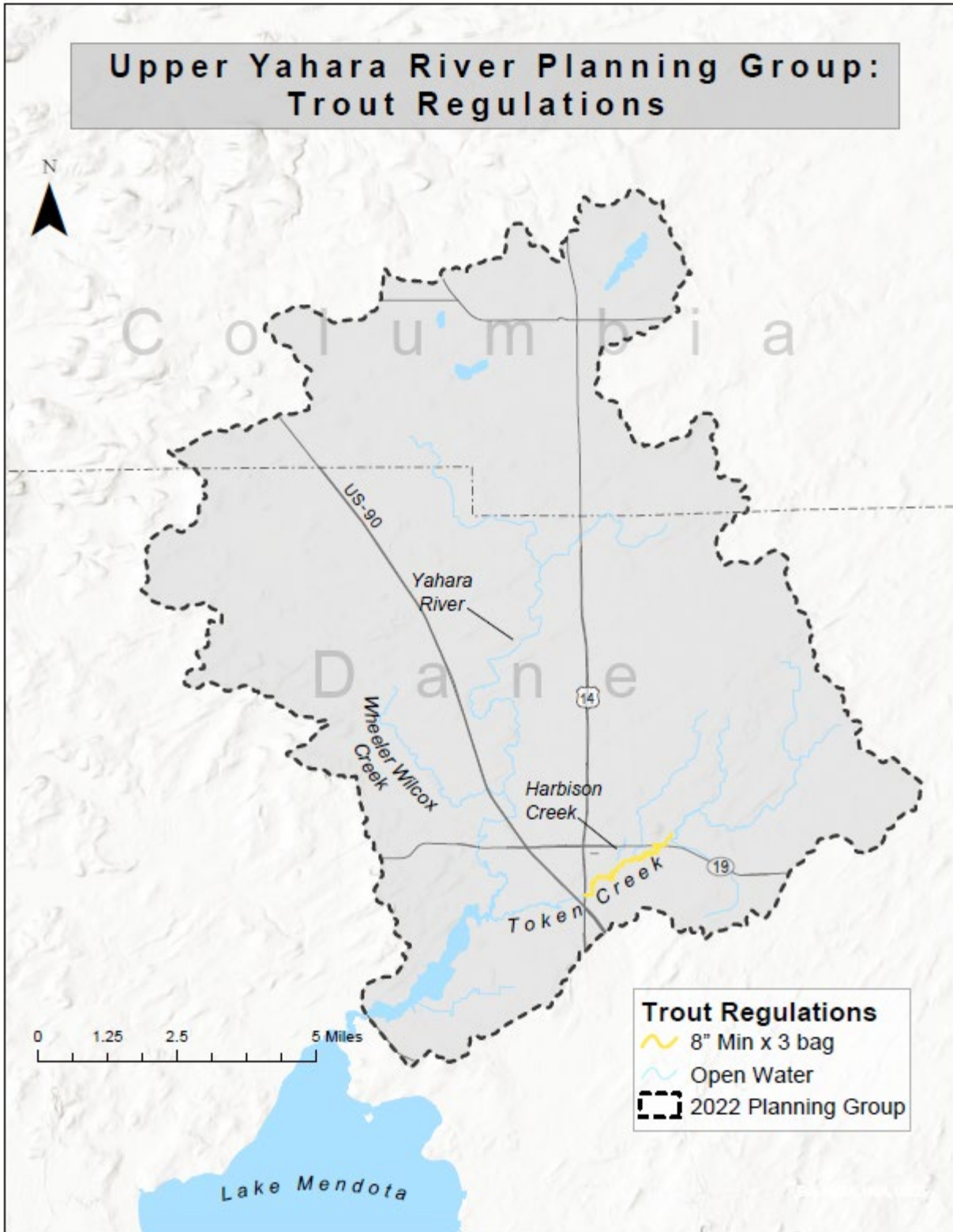


Figure 2. Upper Yahara River Watershed trout streams are regulated under the county base 8 inch minimum length and 3 daily-bag limit.

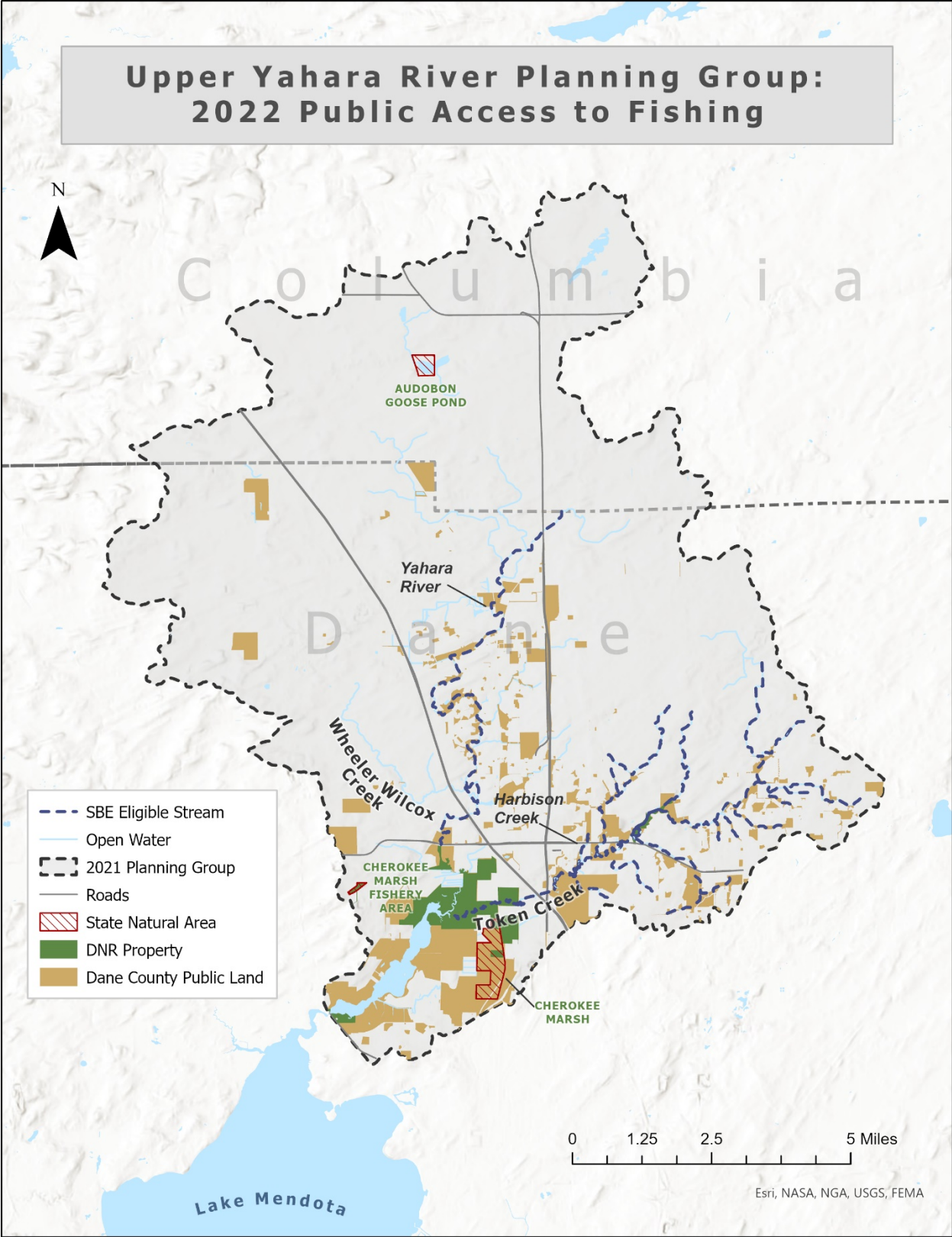


Figure 3. Upper Yahara River Watershed public access points and DNR Stream Bank Easement program eligible waters.

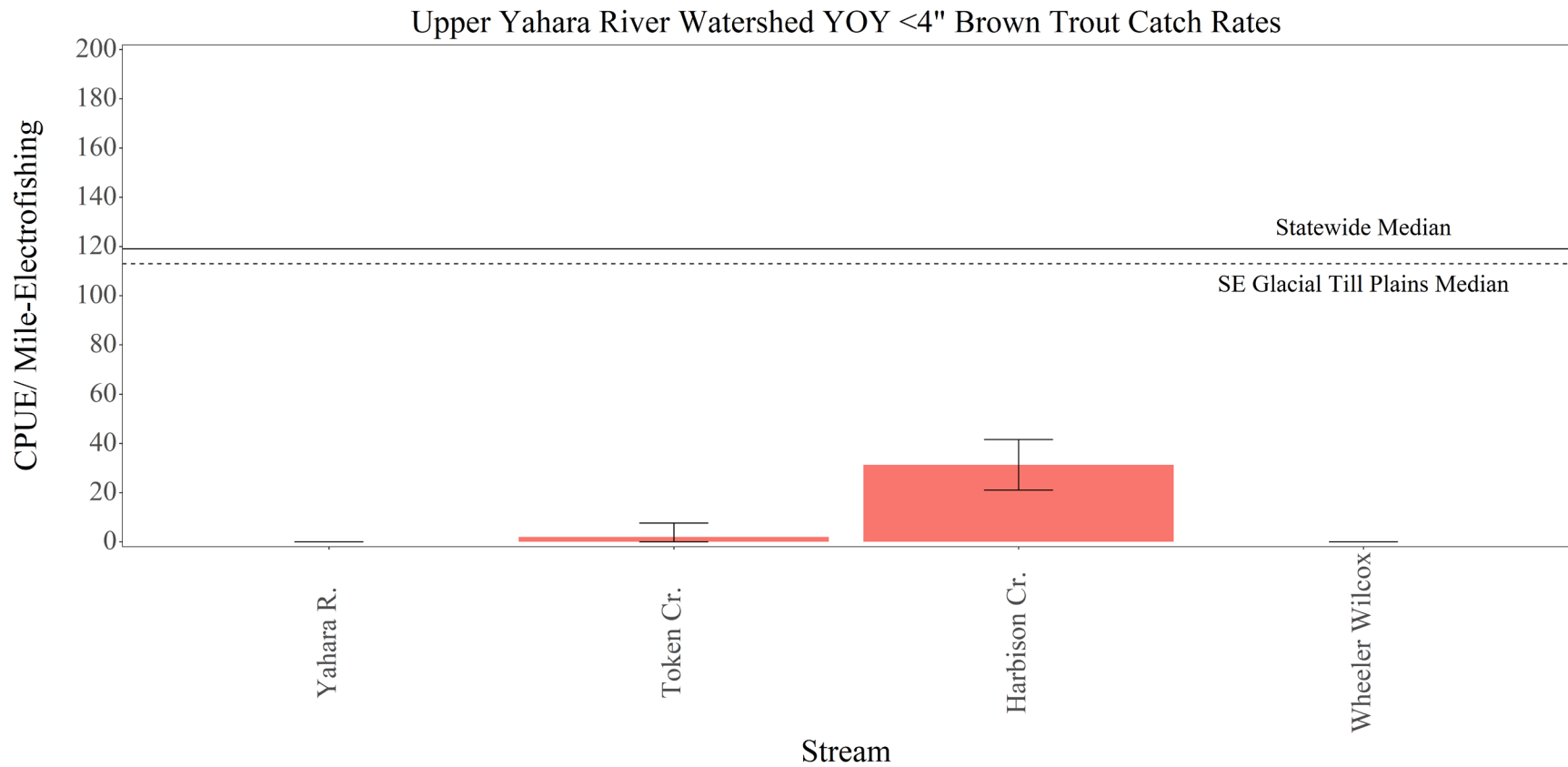


Figure 4. Average young-of-year (YOY; <4 inches) brown trout catch rates across all survey sites for each stream in the Upper Yahara River watershed. Error bars represent minimum and maximum catch rates observed in each stream.

Upper Yahara River Watershed Yearling 4-8" Brown Trout Catch Rates

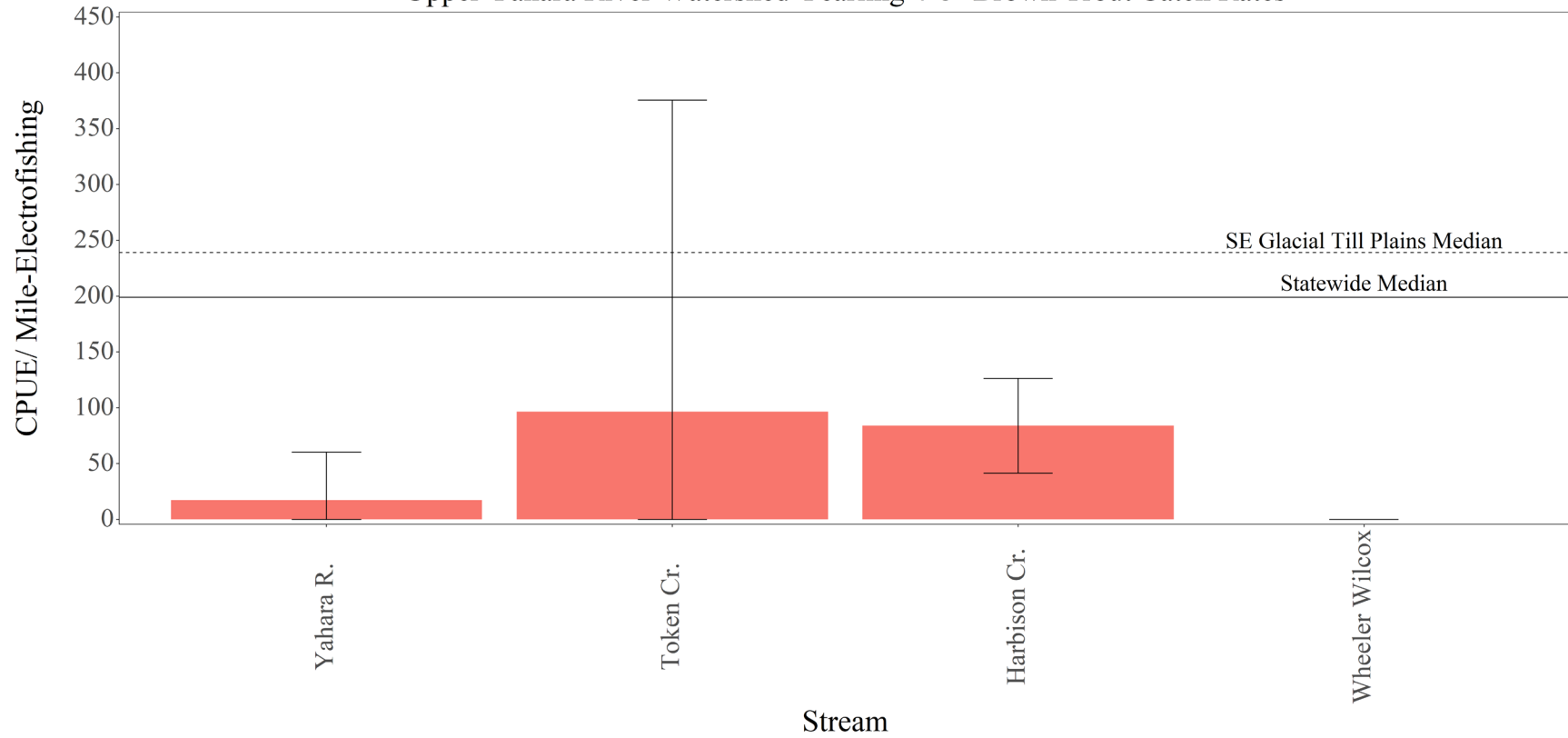


Figure 5. Average yearling brown trout catch rates (>4 & <8 inches) across all survey sites for each stream in the Upper Yahara River watershed. Error bars represent minimum and maximum catch rates observed in each stream.

Upper Yahara River Watershed Adult >8" Brown Trout Catch Rates

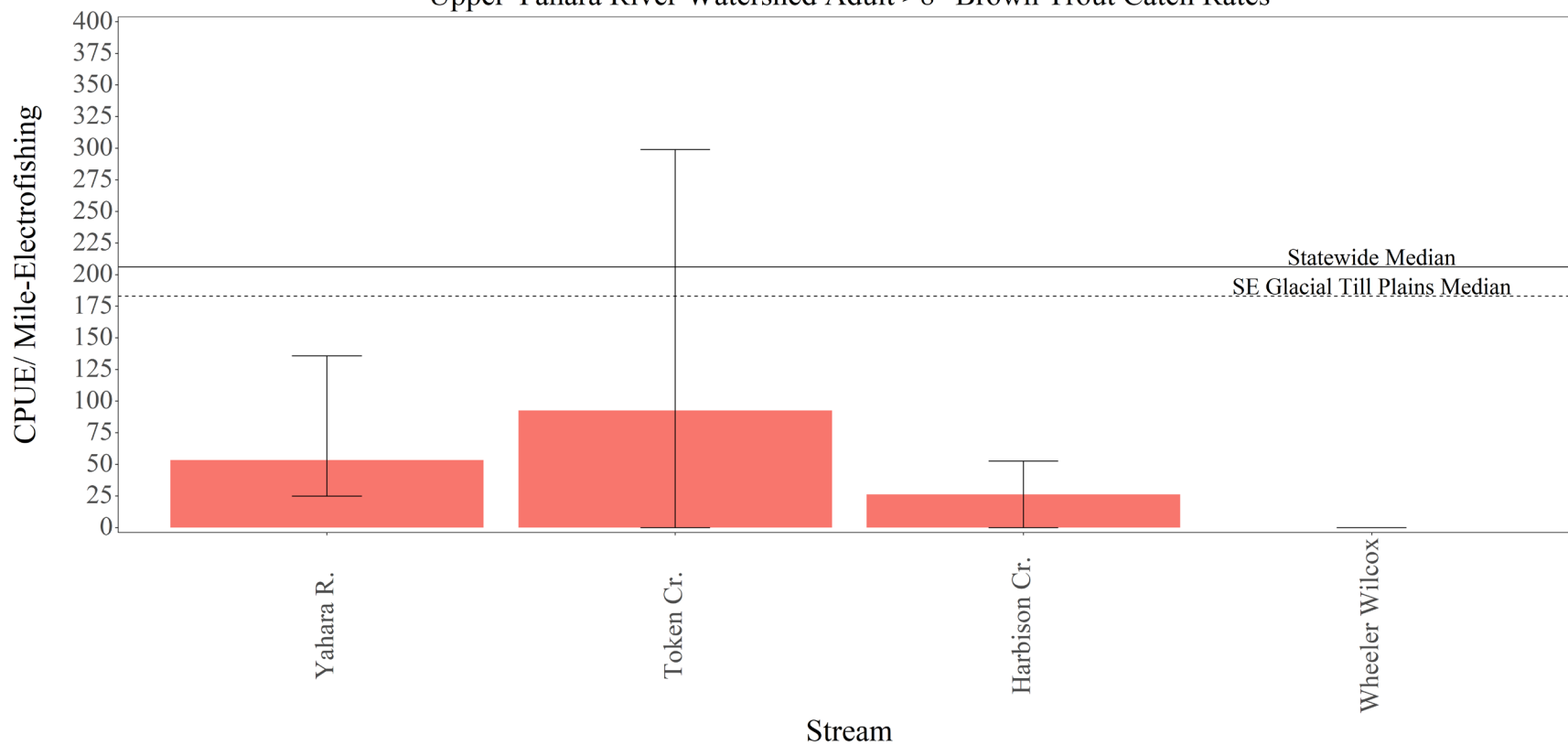


Figure 6. Average adult brown trout catch rates (>8 inches) across all survey sites for each stream in the Upper Yahara River watershed. Error bars represent minimum and maximum catch rates observed in each stream.

Upper Yahara River Watershed >12" Brown Trout Catch Rates

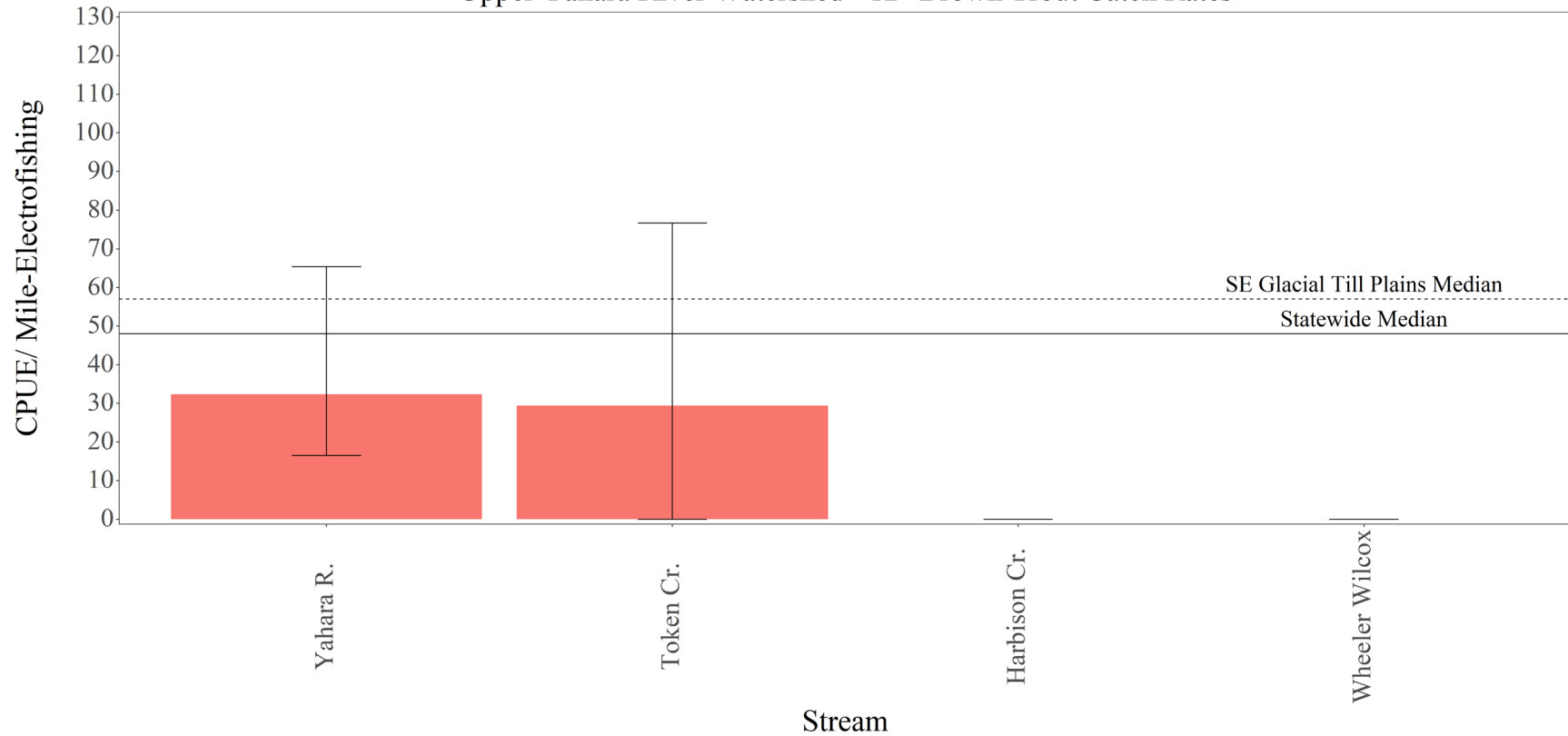


Figure 7. Average preferred brown trout catch rates (>12 inches) across all survey sites for each stream in the Upper Yahara River watershed. Error bars represent minimum and maximum catch rates observed in each stream.