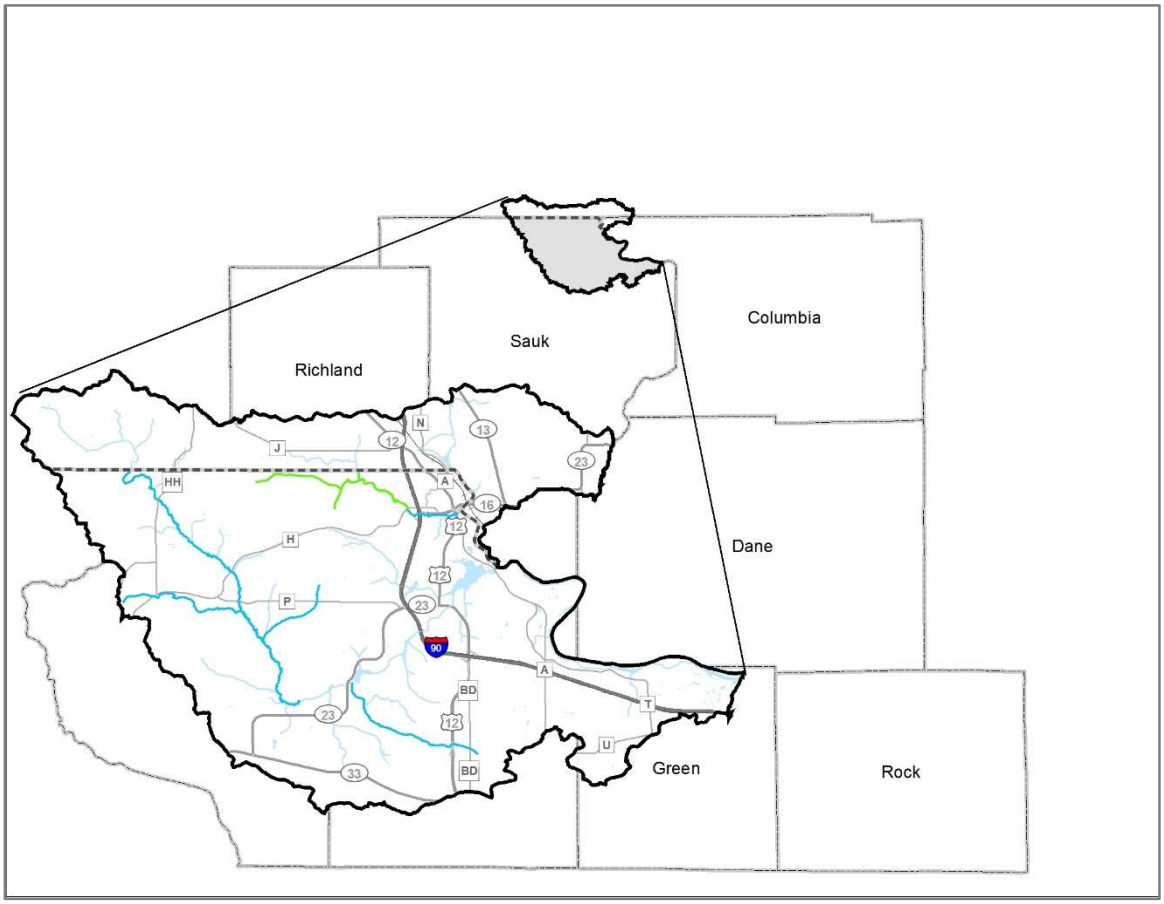
WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Trout Management And Status Of The Dell Creek And Hulburt Creek Watersheds, Sauk County 2021



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EXECUTIVE SUMMARY

Stream electrofishing surveys occurred at 25 locations on 12 streams in the Dell Creek-Hulburt Creek management area in Sauk County in 2021. No fingerling trout were stocked in these systems in 2020 or prior to fishery surveys in 2021 to allow for assessment of natural reproduction (age 0; young-of-year) and natural recruitment to age 1 (yearling) in 2021.

At the time of the 2021 surveys, Hulburt Creek upstream of County Road H and an unnamed tributary to Hulburt Creek (WBIC 1298800) were Class 1 trout streams. Dell Creek, Camels Creek, Beaver Creek, Harrison Creek and Hulburt Creek downstream of County Road H were Class 2 trout waters. Unnamed streams 1297700, 1297600, 1297200, 1296800, 1296600 and 1296500 were all unclassified. Prior to being suspended for this evaluation, the existing trout stocking quotas were large fingerling Brook Trout for Beaver Creek, Harrison Creek and Camels Creek, as well as surplus adult broodstock Brook Trout quotas for Beaver Creek, Camels Creek, Dell Creek and Hulburt Creek. The only active annual Brown Trout stocking quotas were small fingerlings and surplus adult broodstock for Dell Creek. Rainbow Trout stocking quotas were limited to small fingerlings (Trout in the Classroom) and yearlings in Dell Creek.

Brook Trout was the only trout species found in Harrison Creek and unnamed streams 1298800, 1296800, 1296600 and 1296500. Beaver Creek, Hulburt Creek and unnamed streams 1297700, 1297600 and 1297200 had mixed trout populations with Brook Trout as the predominant species. Dell Creek and Camels Creek had mixed trout populations with Brown Trout as the predominant species. Unnamed Stream 1296500 had the highest mean total Brook Trout catch rate and the highest mean catch rate for all size classes. Camels Creek had the highest mean total Brown Trout catch rate and the highest mean catch rate of age 0 and yearling fish. Dell Creek had the highest mean catch rate of adult and preferred-length Brown Trout. Stocked Rainbow Trout were also collected from Dell Creek including age 0 fish that survived to mid-summer from an early stocking in March 2021, and legally harvestable fish stocked as yearlings in April 2021.

MANAGEMENT RECOMMENDATIONS:

- Implement no minimum length limit and five fish daily bag limit for Brown and Rainbow Trout but all Brook Trout must be immediately released, and only artificial lures are allowed on Beaver Creek and Dell Creek from South Avenue downstream to Coon Bluff Road.

- Retain current trout fishing regulations on all remaining streams in the management group.

- Discontinue stocking of fingerling and surplus adult Brown Trout in Dell Creek in favor of stocking fingerling and surplus adult Brook Trout.

- Discontinue fingerling Brook Trout stocking in Beaver Creek and Harrison Creek.

- Continue to allow stocking of surplus adult broodstock Brook Trout in Camels Creek, Beaver Creek, Harrison Creek and Hulburt Creek.

- Quantify the genetic origins of Brook Trout in all streams in the management group through genetic testing.

- Retain current trout stream classifications for Dell Creek, Beaver Creek, Harrison Creek, Hulburt Creek and two unnamed tributaries to Hulburt Creek (1298800 and 3000387).

- Reclassify Camels Creek from Class 2 to Class 1.

- Reclassify unnamed streams 1296500, 1296600, 1296800, 1297200, 1297600 and 1297700 from unclassified to Class 1. All are tributaries to Dell Creek.

- Add unnamed streams 1296500 and 1296600 to the list of Streambank Easement (SBE) acquisition-eligible streams.

- Renew efforts to acquire streambank easements along Dell Creek, Camels Creek and Unnamed Stream 1296800. All are currently SBE acquisition eligible.

INTRODUCTION AND CURRENT STATUS

The Dell Creek-Hulburt Creek trout stream management and planning group is composed of five named streams and eight unnamed streams in the Dell Creek-Wisconsin River HUC-10 watershed. Classified trout streams in the Dell Creek-Wisconsin River HUC-10 watershed (LW26) surveyed for this evaluation are found in Sauk County including Dell Creek and three named tributaries: Camels Creek, Beaver Creek and Harrison Creek.

Additional classified trout streams in this evaluation included Hulburt Creek and one unnamed tributary (WBIC 1298800). A second Class 1 unnamed tributary to Hulburt Creek (WBIC 3000387) is a remote stream with no road or trail access and was excluded from this evaluation. Several additional classified trout streams are found elsewhere in the HUC-10 in Adams and Juneau counties, but those streams are part of a different DNR work unit and were not part of this evaluation.

The Dell Creek-Wisconsin River HUC-10 watershed drains an area of 135.5 square miles which in the year 2000, was divided between forested lands (46.0%), agriculture (30.2%), grassland (13.5%), wetland (5.6%), open water (2.0%), development (1.6%) and other (1.2%) (Table 1, Ripp et al. 2002). Dell Creek, Camels Creek, Beaver Creek and Hulburt Creek are listed as Exceptional Resource Waters. Dell Creek is listed as impaired due to high total phosphorous levels (Wisconsin River TMDL 2019; https://dnr.wi.gov/topic/tmdls/wisconsinriver/).

Dell Creek (WBIC 1275200) is 23.4 miles in length, rising in the Town of Seven Mile Creek in southeastern Juneau County. Dell Creek flows southeast, then east, taking in numerous named and unnamed tributaries. Two impoundments exist on lower Dell Creek; Mirror Lake was formed by the construction of the Timme Mill Dam in 1857 (current dam constructed in 1932), and Lake Delton was formed by the construction of a dam in 1927. Dell Creek flows into the Wisconsin River approximately 0.4 mile downstream of the outlet of Lake Delton. The upper 10.5 miles of Dell Creek is Class 2 trout water which ends approximately two miles upstream of where Dell Creek enters

Mirror Lake. Dell Creek has an extensive stocking history, including stocking fingerling Brook Trout and Brown Trout concurrently in most years from 1972-1995. Fingerling Brook Trout stocking ceased after 1995. Surplus adult broodstock Brook Trout were stocked annually from 2011-2021. Fingerling Brown Trout stocking continued from 1996-2019, and surplus adult broodstock Brown Trout were stocked from 2016-2020. Yearling Rainbow Trout were stocked in most years from 1972-1976, 1990-1993, and 2000-2021 to provide additional trout catch and harvest opportunities for anglers. Extensive public access exists on Dell Creek Wildlife Area, a 2,557-acre public hunting and fishing area managed by the Wisconsin Department of Natural Resources (DNR), which includes several parcels along the length of the classified portion of Dell Creek.

Camels Creek (WBIC 1297500) is 3.9 miles in length, rising in the southeastern part of the Town of Winfield in Sauk County. The stream flows eastward with a gradient of 17 feet/mile, draining a watershed of approximately 4 square miles (Ball et al. 1971). Camels Creek flows through an extensive wetland complex upstream of Town Hall Road, picking up substantial ground water and one unnamed tributary in that stretch. Camels Creek joins Dell Creek approximately 0.4 mile downstream of County Road P. Camels Creek is Class 2 trout water for its entire length and was stocked with fingerling Brook Trout in most years from 1975-2019. One trout habitat improvement project has been completed by a private landowner immediately downstream of Town Hall Road.

Beaver Creek (WBIC 1297300) is 2.4 miles in length, rising in the southeastern part of the Town of Dellona in Sauk County. The stream flows south, then southwest with a gradient of 19 feet/mile, draining a watershed of approximately 3.7 square miles (Ball et al. 1971). Beaver Creek is joined by four unnamed intermittent tributaries before flowing into Dell Creek approximately 0.1 mile downstream of South Avenue. Beaver Creek is Class 2 trout water for its entire length and was stocked with fingerling Brook Trout in most years over two time periods: 1972-1994 and 2010-2019.

Harrison Creek (WBIC 1296400) is 4.5 miles in length, rising in the southeastern part of the Town of Delton in Sauk County. The stream flows in a northwesterly direction with a gradient of 25 feet/mile draining a watershed of approximately 4.4 square miles. Harrison Creek is joined by two unnamed intermittent tributaries before flowing into Dell Creek approximately 0.1 mile upstream of where Dell Creek enters Mirror Lake. Harrison Creek is Class 2 trout water for its entire length and was stocked with fingerling Brook Trout in most years from 1972-2019.

Six unnamed streams were evaluated for their potential to support trout in the Dell Creek Watershed. These streams are only identified by their Water Body Identification code (WBIC). The streams are WBIC: 1296500, 1296600, 1296800, 1297200, 1297600 1297700. All these streams are relatively small, less than 3 meters in average width and less than 2cfs in discharge. They are all predicted to have cool-cold headwaters fish community by the stream natural community model. None have any history of trout stocking or previous classification as a trout stream, and some have never had fishery surveys conducted on them. There is public access to the lower ends of WBIC 1296500, 1296800 and 129700 via the Dell Creek Wildlife Area. Detailed descriptions of the locations of the headwaters and outlets of all streams in the evaluation can be found in Table 2.

Hulburt Creek (WBIC 1298500) is 6.5 miles in length, rising in the north-central part of the Town of Dellona in Sauk County. The stream flows east, then southeast, taking in

five intermittent and three perennial tributaries before flowing into the Wisconsin River in Wisconsin Dells approximately 0.2 mile below Kilbourn Dam. The stream is Class 1 trout water from the headwater downstream to County Road H. From County Road H downstream to the Wisconsin River, Hulburt Creek is Class 2 trout water. Trout management focused on fingerling Brown Trout stocking from 1977-2009, but switched to more passive Brook Trout management, with surplus broodstock Brook Trout stocked from 2012-2020 except for 2017. Much of the perennial portion of Hulburt Creek flows through Hulburt Creek Fishery Area, a 617-acre public hunting and fishing area managed by the DNR. Included within the fishery area is the 166-acre Hulburt Creek Woods State Natural Area.

There are two unnamed tributary streams in the Hulburt Creek sub-watershed. Unnamed Stream 1298800 is approximately 1.7 miles in length, rising in southeastern Juneau County. Unnamed Stream 1298800 is a designated Class 1 trout water for approximately 0.3 mile from the Sauk-Juneau County line downstream to the mouth. The stream had no history of stocking. Unnamed Stream 3000387 is approximately 0.6 mile in length, rising in the northeastern part of the Town of Dellona, Sauk County. Unnamed Stream 3000387 is designated a Class 1 trout water; however, the stream is remote and very difficult to access and was not sampled in 2021.

Current stream classifications are shown on the map of the watershed in Figure 1. The current trout fishing regulation for most streams in the Dell Creek-Hulburt Creek stream management group is an 8-inch minimum length limit with a three fish daily bag limit and no bait restrictions (Figure 2). This is the county-wide base trout regulation for both Sauk and Juneau counties. Two exceptions are Dell Creek from Coon Bluff Road upstream to South Avenue and Beaver Creek which flows into Dell Creek in this section where all trout caught must be immediately released. Additionally, only artificial baits or lures are allowed. Public access for fishing along Dell Creek, Hulburt Creek, and their tributaries can be found on the map in Figure 3. Current trout stocking quotas for the management area are listed in Table 3.

METHODS

STREAM SAMPLING

Summer stream sampling at six-year rotational sites and trout potential sites in 2021 spanned from June 21 through July 28, and the sampling locations, site metrics and gear used are described in Tables 4 and 5 as well as Figure 1. Sixteen sites were located on currently classified trout waters and are surveyed every six years (rotational), while nine sites were located on streams not yet classified as trout water to determine if the streams should be reclassified as trout water (trout potential). Timing of sampling attempted to match dates of surveys in previous years as closely as possible. Of the 25 stream sites sampled, 18 were surveyed with a backpack electrofishing unit and seven were sampled with a tow-barge utilizing two anodes.

Electrofishing surveys followed standard DNR protocols for cold water wadable streams (FM Handbook Chapter 510). All fish were collected at trend sites where gamefish, exotic species and threatened/endangered species were measured to total length. Only the first 200 fish of a given species were measured if large numbers of gamefish were encountered. Young-of-year were counted and a subsample of 50 fish were measured. Individuals of other fish species were counted to calculate the index of biotic integrity (IBI) score.

Water quality and habitat metrics were also collected at each survey site. Streamflow was calculated at one transect at each site using a Hach FH950.1 handheld flow meter. Dissolved oxygen was measured using a handheld YSI Pro 2030 meter. Stream temperature, specific conductivity, pH, total dissolved solids and salinity were measured using an Oakton PCS Testr 35 hand-held multi-parameter meter. Stream habitat metrics were collected using a 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. All stream sites sampled in 2021 met the <10 m stream width criteria (Table 5).

POPULATION ASSESSMENT

Per Chapter 1 of Wisconsin Administrative code, specifically NR 1.02(7)(b), Wisconsin trout streams can be classified into one of three groups. A Class 1 stream (or portion thereof) contains trout spawning habitat and naturally produced fry, fingerling and yearlings in sufficient numbers to utilize the habitat, or the stream contains trout with two or more age groups, above the age of one year, and natural reproduction and survival of wild fish in sufficient numbers to utilize the available trout habitat and to sustain the fishery without stocking. A Class 2 stream (or portion thereof) contains a population of trout made up of one or more age groups, above the age of one year, in sufficient numbers to indicate substantial survival from one year to the next and may or may not have natural reproduction of trout occurring; however, stocking is necessary to fully utilize the available trout habitat or to sustain the fishery. A Class 3 stream (or portion thereof) requires annual stocking of trout to provide significant harvest and does not provide habitat suitable for the survival of trout throughout the year, or for natural reproduction of trout.

To appropriately classify a trout stream or a portion of one into one of these three classes, managers must conduct field surveys to assess the overall population age structure to determine which classification criteria are being met, and to identify impediments to meeting these criteria. Survey results may also indicate that a change in classification is warranted. The two most vital components to assess are natural reproduction and natural recruitment, and this must occur in the absence of stocking to clearly account for naturally produced fish. Natural reproduction is indicated by the presence of age 0 fish, also called young-of-year (YOY), in a non-stocked year. Natural recruitment is indicated by the presence of yearling fish in the year following a non-stocked year; these are fish that were naturally produced and survived for one year. No stocking of fingerling trout occurred in the Dell Creek-Hulburt Creek stream management group in 2020 or prior to fishery surveys in 2021 to allow for evaluation of natural reproduction and recruitment in 2021.

The age 0 trout catch rates in 2021 were thus indices of natural reproduction while the age 1 catch rates in 2021 served as indices of natural recruitment to the fisheries of the respective streams. For streams with regular fingerling stocking quotas, adult fish sampled in 2021 were fish ≥ 2 years of age that were the product of either natural reproduction or stocking that occurred in 2019 or earlier.

Trout catch-per-unit effort (CPUE, fish/mile) was calculated for each trout species based on the number of fish collected and the length of stream station sampled. The CPUE will be referred to in the narrative as the catch rate, and in tables and figures as CPUE. This

allowed for comparisons of catch rates both within and among streams. Total catch rate, as well size-specific catch rates were calculated for young-of-year (age 0, <4.0 inches), yearlings (4.0-7.9 inches for Brown Trout and 4.0-6.9 inches for Brook Trout), and adults (age ≥ 2 years; ≥7 inches for Brook Trout and ≥8 inches for Brown Trout). Preferred-length trout were Brook Trout ≥ 10 inches and Brown Trout ≥ 12 inches.

Percentile values for size-specific trout catch rates referenced in the narrative, tables, and figures in this paper were generated from summaries of DNR fishery surveys of Class 1 trout streams in the Driftless Area and Western Corn Belt Plains Ecoregion of Wisconsin (referred to as Driftless Area) as well as statewide from 2007-2014 where at least one trout was collected in the survey (surveys where the catch was zero were excluded). For reference, the Level III Ecoregions of Wisconsin, including the Driftless Area, are shown in Figure 4. Please refer to Tables 6 and 7 for reference values for the 10^{th}, 25^{th}, 35^{th}, 50^{th} (median), 65^{th}, 75^{th} and 90^{th} percentiles for catch rates for various size classes of Brook Trout and Brown Trout from surveys of Class 1 streams in the Driftless Area and statewide. Catch rate values that fell below the 35^{th} percentile indicated low trout abundance, between the 35^{th} and 65^{th} percentiles indicated moderate abundance, and values above the 65^{th} percentile indicated high abundance. Brook Trout were the predominant trout species across the watershed and streams are presented in the discussion section of the report in order of total Brook Trout abundance.

RESULTS

In total, 25 stream sites were sampled on 12 streams within the Dell Creek-Hulburt Creek management group in 2021. Data are presented as both individual stream sites, as well as whole streams (average CPUE for all sites on a given stream) for regional and statewide comparisons. Unnamed streams sampled in 2021 are referred to by their Waterbody Identification Code (WBIC). Data from only one site are presented for 1296500 because the stream was too warm and anoxic to support trout upstream of its confluence with 1296600 and that section of the stream is not being proposed for trout classification. Brook Trout were the predominant trout species in all streams in the group except for Dell Creek and Camels Creek where Brown Trout were more common. Stocked Rainbow Trout were also present in Dell Creek and Camels Creek.

BROOK TROUT

Brook Trout were collected at 21 of 25 sampling locations overall in the management group in 2021, and Brook Trout were collected from at least one sampling location on every stream visited (Table 8). Stream total catch rates for Brook Trout varied from very high at 2688.3/mile (1296500) to low at 48.3/mile (Beaver Creek; Table 9, Figure 5). Streams 1296500 and 1296800 have high Brook Trout abundance when compared both regionally and statewide. Camels Creek,1296600, 1297600, 1298800 and Hulbert Creek had moderate mean total abundance of Brook Trout, but individual sites exceed the driftless region and statewide medians. Dell Creek, Harrison Creek, unnamed streams 1297200 and 1297700 had low abundances.

YOY (Age 0; <4.0 inches) Brook Trout were found in 11 of 12 streams in the Dell Creek and Hulburt Creek sub watersheds, with the lone exception being unnamed stream 1297700 (Figure 6). Unnamed streams 1296500, 1296600, 1296800, 1297600 and Camels Creek all had moderate to high YOY Brook Trout abundance, with each stream placing at or above Driftless Region and Statewide median catch rates. Unnamed

stream 1296500 had the highest reproduction with 708/mile. Beaver, Harrison, unnamed streams 1297200 and 1298800 all had low levels of reproduction.

Yearling Brook Trout (Age 1; 4.0-6.9 inches) were found in 10 of 12 streams in the group with Harrison Creek and Beaver Creek being the only exceptions (Figure 7). High levels of recruitment were observed in unnamed streams 1296500 and 1296800, with yearling catch rates exceeding the 75th percentile for driftless and statewide distributions. Camels, 129660, 1297700, 1298800 and Hulbert creek all had moderate abundances of yearlings while Dell, 1297200 and 1297600 had low yearling Brook Trout abundance.

Adult Brook Trout (≥7 inches) were observed in 10 of the 12 streams (Figure 8). Dell and Hulbert creek had moderate adult abundance while 1296500 and 1296800 had high abundance exceeding the regional and statewide 90th percentiles. Adult Brook Trout were absent from unnamed streams 1297700 and 1298800. Preferred-length Brook Trout (≥10 inches) were collected from Unnamed Stream 1296500, Dell Creek, Unnamed Stream 1296800 and Hulburt Creek. Streams 1296500 and 1296800 stood out as having high adult abundance and moderate to high abundance of preferred-length fish when compared regionally and statewide (Figure 9).

BROWN TROUT

Brown Trout were collected from seven of the 12 streams surveyed including 15 of 25 total sampling locations in the management group in 2021 and were the predominant trout species in Dell Creek and Camels Creek. Brown Trout were not found in Harrison Creek, three different unnamed streams in the Dell Creek watershed, and one unnamed tributary to Hulburt Creek. Please refer to Tables 10 and 11 and Figure 10 for Brown Trout catch rates for all size classes from all sampling locations as well as averages for each stream.

Camels Creek had the highest mean total Brown Trout catch rate of all streams in the group despite no management activity that would favor Brown Trout over Brook Trout. On a regional and statewide scale, total Brown Trout abundance was low across the Dell Creek-Hulburt Creek group, placing well below median catch rate values (Figure 10). YOY trout could only be considered abundant in Camels Creek where the mean catch rate was well above regional and statewide median values. YOY Brown Trout catch rates are presented in Figure 11.

Yearling Brown Trout abundance was low to moderate across the entire Dell Creek-Hulburt Creek management group when compared to regional and statewide median values. Yearling catch rates for all streams are presented in Figure 12. Adult Brown Trout abundance was also low to moderate at best across the management group when compared to regional and statewide median values. The adult Brown Trout catch rate was below the Driftless Region median at all sampling locations and surpassed the statewide median at a single site on Dell Creek. Adult Brown Trout (≥8 inches) were most abundant in Dell Creek but in regional and statewide comparisons, abundance was only low to moderate (Figure 13). Preferred-length Brown Trout were only found in Dell Creek and Hulburt Creek, with abundance in both streams low compared to regional and statewide medians (Figure 14).

RAINBOW TROUT

Rainbow Trout were found primarily in Dell Creek, the lone stream in the group where Rainbows are stocked. The mean age 0 Rainbow Trout catch rate in Dell Creek was 41.8 fish/mile and the mean catch rate of fish ≥8 inches was 40.2 fish/mile. A single Rainbow Trout ≥12 inches was collected downstream of South Avenue. A single 9.5-inch Rainbow Trout was also collected from Camels Creek downstream of Simpson Road, the closest sampling location to the confluence of Camels Creek and Dell Creek. Rainbow Trout were not collected from any other stream in the group.

DISCUSSION

GENERAL

The Dell Creek watershed includes several Class 2 streams with ongoing active trout management. Brook Trout were found in 10 of 10 streams in the watershed, were the predominant trout species in eight of 10 streams, and in four of those streams, Brook Trout was the only trout species found. Several unnamed tributaries to Dell Creek were found to have self-sustaining trout populations dominated by Brook Trout despite no history of active trout management. Dell Creek, the largest stream in the watershed has historically been managed to maximize Brown Trout angling opportunities and was one of only two streams with more Brown Trout and Brook Trout; Camels Creek was the other.

Brook Trout was also the predominant trout species in Hulburt Creek and its lone surveyed tributary in 2021, with Brown Trout also present in the lower reaches of Hulburt Creek. Their presence reflects a management strategy that utilized small fingerling Brown Trout stockings in all but two years, from 1977-2009, before switching back to passive Brook Trout management. The Brown Trout population established through that extended period of stocking persists to this day.

UNNAMED STREAM 1296500

Unnamed Stream 1296500, a tributary to Dell Creek, was unclassified prior to this evaluation and there were no prior surveys on file for this stream in the Poynette office or in the DNR Fisheries Management Information System. Despite this, sampling in 2021 found the highest abundance of Brook Trout out of 12 streams in the management group. This was true for all size classes of Brook Trout. The sampling location downstream of State Highway 23 had a total catch rate of nearly 2,700 Brook Trout per mile. Sampling also revealed that trout only inhabited this stream downstream of its confluence with Unnamed Stream 1296600. Above that confluence, Unnamed Stream 1296500 did not support trout due to the stream being too warm and anoxic. The stream has an impoundment in its upper reaches (Buckhorn Lake). Warm, anoxic water flowing out of the impoundment in the summer hinders the stream until it joins with the colder, oxygen rich waters of Unnamed Stream 1296600, which significantly increases the flow volume of the stream and produces conditions favorable for supporting large numbers of Brook Trout. Cold water fish IBI scores reinforced this hypothesis. The cold water fish IBI score upstream of the confluence with 1296600 was 10 (Poor) compared to 90 (Excellent) below the confluence. Natural reproduction, recruitment, adult abundance and abundance of preferred-length Brook Trout were all high compared to Class 1 streams in the Driftless Region and statewide.

Based on high abundance of all size classes of Brook Trout in Unnamed Stream 1296500 compared to other streams in the Driftless region and statewide, this stream should be reclassified from Unclassified to Class 1. The classification should include the

approximately 1.2-mile portion of the stream beginning at its confluence with Unnamed Stream 1296600 downstream to the mouth where it flows into Dell Creek.

This stream is not currently eligible for SBE and no public access to the stream beyond road crossings currently exists. Considering its quality as a trout stream and likely re-classification to Class 1, addition of this stream to the list of SBE eligible waters was recommended as part of the master planning process for the Central Sand Plains to create the potential for increased public access and added streambank habitat protection. If the stream becomes SBE eligible, acquisition should focus on parcels with extensive stretches of two-bank stream frontage. Additionally, an expansion to the NRB-approved fee title acquisition boundary at Dell Creek Wildlife Area has been requested as part of the master planning process for the Central Sand Plains. The expansion encompasses all private lands downstream of State Road 23 through which 1296500 flows. Acquisition of these parcels would greatly increase the Department's capacity to protect this high-quality Brook Trout stream as well as provide increased angler access to the stream.

UNNAMED STREAM 1296800

Unnamed Stream 1296800, a tributary to Dell Creek, was unclassified prior to this evaluation and there was only a single survey on file for this stream in the DNR Fisheries Management Information System from November 2006. Sampling in 2021 found the second highest abundance of Brook Trout out of 12 streams in the Dell Creek and Hulburt Creek watersheds. Adult, yearling and YOY abundances were all high as well as preferred sized Brook Trout when compared to regional and statewide catch rates.

Based on the high abundance of all size classes of Brook Trout in Unnamed Stream 1296800 compared to other streams in the Driftless region and statewide, this stream should be reclassified from Unclassified to Class 1. The classification should include the approximately 0.6-mile perennial segment of the stream beginning at its confluence with Unnamed Stream 5030344 downstream to the mouth where it flows into Dell Creek.

This stream is currently eligible for SBE, and to date one easement has been acquired immediately downstream of State Road 23. Around half the perennial portion of the stream is already under DNR ownership through this easement and fee title ownership at Dell Creek Wildlife Area. Additional easement acquisition on this stream is warranted if the opportunity arises to provide more access to this high-quality trout stream, but more importantly to provide an added measure of habitat protection for the stream. An additional investigation should occur on this stream in summer 2022 to determine if it is perennially flowing water at the next road crossing upstream from State Road 23 (N. Reedsburg Road), and if trout are present there. If the stream supports trout at that location, the proposed reclassification should then extend approximately 1.1 miles from the confluence of Unnamed Stream 1296800 and Unnamed Stream 5030262 downstream to the mouth of Unnamed Stream 1296800. This investigation can be accomplished prior to the next round of trout stream classifications in fall 2022.

HULBURT CREEK

Hulburt Creek had the third highest mean total Brook Trout catch rate out of 12 streams in the Dell Creek-Hulburt Creek management group in 2021. Preferred, adult, yearling and YOY Brook Trout abundances were all moderate compared to regional and

statewide catch rates. Natural recruitment as measured by age 1 trout abundance was ranked 5th out of 12 streams in the management group.

Natural reproduction and recruitment of Brown Trout was also evident in Hulburt Creek, although Brook Trout far outnumbered Brown trout during surveys in 2021 as well as during the previous surveys in 2017. Brown Trout were absent from upper Hulburt Creek in 2021 and were most common at the sampling location closest to the mouth of the stream. Likewise, cold water fish IBI scores in 2021 were highest in upper Hulburt Creek (60, Good) compared to lower Hulburt Creek where the scores were 40 (Fair) and 50 (Fair), indicative of conditions potentially better suited to Brown Trout in lower Hulburt Creek. Brown Trout in Hulburt Creek today are the product of a lengthy history of Brown Trout stocking from 1977-2009. Since 2009, the only stocking in Hulburt Creek has been surplus adult broodstock Brook Trout from Nevin State Fish Hatchery; 50-100 fish were stocked annually from 2012-2020 except for 2017.

No age 0 Brown Trout were collected from Hulburt Creek in 2021. Natural recruitment was observed and abundance of age 1 Brown Trout (age 1 CPUE; natural recruitment) was the second highest of any stream in the management group behind only Dell Creek. Abundance of adult Brown Trout in Hulburt Creek was 4th highest out of seven streams in the management group where Brown Trout were found. However, Brown Trout abundance was low to moderate for the various size classes when compared regionally and statewide.

Based on overall abundance, natural reproduction and natural recruitment of Brook and Brown Trout, Hulburt Creek is performing at the Class 1 level upstream of County Road H and no change in classification is needed. Natural reproduction and recruitment of trout in the Class 2 section (two sampling locations downstream of County Road H) are markedly lower that what was observed in the Class 1 section and compared poorly regionally and statewide. For this reason, it is recommended to retain the Class 2 designation for Hulburt Creek downstream of County Road H.

While trout abundance overall in Hulburt Creek is only moderate, it is important to remember that Hulburt Creek is a relatively small stream with a bottom substrate dominated by sand. Much of the perennial portion of the creek flows through Hulburt Creek Fishery Area and the stream corridor is relatively undisturbed. Natural in-stream fish habitat is provided by overhanging vegetation, in-stream coarse woody structure, undercut banks and occasional deep pools. The stream is living up to its potential in its current state. Intensive habitat improvements on Hulburt Creek are not warranted for several reasons including the small size of the stream, the remote nature of much of the stream, the difficulty of working along the stream due to the presence of wetlands, the potential damage to unique habitat features along the stream and the minimal expected increase in trout abundance and size structure resulting from such a project. Stocking of fingerling trout is not needed to maintain the trout population in Hulburt Creek. However, the stream is a suitable location for stocking of surplus adult broodstock Brook Trout provided that only fish with native genetics are stocked (true for all streams).

Hulburt Creek is not approved for SBE. However, fee-title acquisition is possible within the NRB-approved project boundary for the Hulburt Creek Fishery Area. Efforts are underway to adjust the project boundary for the fishery area through the Central Sand Plains Master Plan. This boundary adjustment would expand the current acquisition boundary to run along tax parcel boundaries for parcels adjacent to lands already owned

by the state. Currently, the project boundary bisects many of the adjacent parcels and this has made acquisition of adjacent private land very difficult even when adjacent landowners wished to donate lands to the Department free of charge. Expansion of the NRB-approved boundary on adjacent parcels will remove this hurdle to acquisition of new lands for the fishery area.

UNNAMED STREAM 1297600

Unnamed Stream 1297600, a tributary to Dell Creek, was unclassified prior to this evaluation with only two surveys on file for this stream in the DNR Fisheries Management Information System from September 2004. Sampling in 2021 found the fifth highest abundance of Brook Trout out of 12 streams in the Dell Creek and Hulburt Creek watersheds. Total Brook Trout abundance was moderate. Abundance of age 0 Brook Trout was high, but natural recruitment and adult Brook Trout abundance were low and preferred-length Brook Trout were not found. The only Brown Trout collected from Unnamed Stream 1297600 were two yearlings collected from the sampling location 160 meters upstream of the confluence with Dell Creek.

Age 0, yearling and adult Brook Trout were all collected from Unnamed Stream 1297600 despite the lack of any history of Brook Trout stocking. The stream is relatively small, with flow rates ranging from 0.7-2.2 cfs on the date of sampling. While abundance was only moderate overall, based on the size of the stream it appeared that the Brook Trout were fully utilizing the available habitat. Therefore, Unnamed Stream 1297600 meets the definition of a Class 1 trout stream and should be reclassified as such. Yearling and adult Brook Trout abundance were low, but age 0 abundance was near the top compared to other streams in the area, and this stream should be recognized for its value as a Brook Trout nursery stream. Additionally, cold water fish IBI scores were 90 (Excellent) at the upstream location and 80 (Good) at the downstream location, further suggesting that this stream is indeed a quality cold water resource.

Due to the small size of the stream, stocking additional fingerling trout is not likely to affect an increase in Brook Trout abundance or size structure, and stocking is not recommended. Likewise, an investment in intensive in-stream habitat work is not likely to affect major changes in the trout population and habitat dollars should be spent elsewhere. Unnamed Stream 1297600 is not likely to receive much fishing pressure from anglers and the current fishing regulation (county base regulation) offers the trout population sufficient protection from harvest. No regulation change is recommended.

Unnamed Stream 1297600 is eligible for SBE, and one acquisition has been completed upstream of Oak Hill Road. Future SBE acquisitions along this stream, while providing public access, are of the most value in terms of the protection that the easement would offer to the stream corridor. Easement acquisition should be pursued as interest on the part of riparian landowners allows, preferably on larger parcels with extensive two-bank stream frontage.

UNNAMED STREAM 1296600

Unnamed Stream 1296600, a tributary to Unnamed Stream 1296500, was unclassified prior to this evaluation with no prior surveys on file in the Poynette office or the DNR Fisheries Management Information System. Sampling in 2021 found the fourth highest abundance of Brook Trout out of 12 streams in the management group and Brook Trout were the only trout species found. When compared regionally and statewide total Brook

Trout abundance and abundance of YOY and yearling fish was moderate. Adult Brook Trout abundance was low and preferred-length fish were not found.

Age 0, yearling and adult Brook Trout were all collected from Unnamed Stream 1296600 despite having no history of Brook Trout stocking. The stream is relatively small, with a flow rate of 0.7 cfs on the date of sampling. The cold water fish IBI score for the stream was 90 (Excellent), indicating that the stream is indeed a quality cold water resource. While abundance was only moderate overall, based on the flow volume and the size of the stream (mean width = 2 meters) it appears that the Brook Trout are fully utilizing the available habitat. Unnamed Stream 1296600 meets the definition of a Class 1 trout stream and should be reclassified as such. Adult Brook Trout abundance was low, but age 0 and yearling abundance compared favorably locally, regionally and statewide. This stream should be recognized for its value as a Brook Trout nursery stream, particularly when considering that its contribution of cold flow and trout recruitment to Unnamed Stream 1296500 transformed the latter from a stream that did not support trout above the confluence with Unnamed Stream 1296600 to the stream with the highest Brook Trout abundance (total abundance and all size classes) of any stream in the management group downstream of the confluence. It should be noted also that throughout the sampling station, numerous groundwater seeps and springs were observed, either along the banks or coming directly out of the bottom of the stream. The segment of Unnamed Stream 1296600 to be classified includes the portion of the stream mapped as perennial water, from the confluence with Unnamed Stream 5030281 downstream to the confluence with Unnamed Stream 1296500.

Due to the small size of the stream, stocking additional fingerling trout is not likely to affect an increase in Brook Trout abundance or size structure, and stocking is not recommended. Likewise, an investment in intensive in-stream habitat work is not likely to affect major changes in the trout population and habitat dollars should be spent elsewhere. Unnamed Stream 1296600 is not likely to receive much fishing pressure from anglers and the current fishing regulation (county base regulation) offers the trout population sufficient protection from harvest; no regulation change is needed.

Unnamed Stream 1296600 is not eligible for SBE however considering the stream's pending trout classification and overall value to the Dell Creek watershed, a proposal to add the stream to the list of SBE eligible waters as part of the Central Sand Plains Master Plan, primarily for the potential to increase stream bank protection. If the stream becomes SBE eligible, acquisition efforts should focus on parcels with extensive reaches of two-bank frontage.

CAMELS CREEK

Camels Creek was Class 2 trout water prior to this evaluation with the most recent surveys occurring in 2015. Sampling in 2021 found the 6th highest abundance of Brook Trout out of 12 streams in the Dell Creek and Hulburt Creek watersheds. Regional and statewide comparisons found that total Brook Trout abundance was moderate and the same was true for YOY, yearling and adult trout. Preferred-length Brook Trout were not collected from Camels Creek.

Natural reproduction and recruitment of Brown Trout was evident in Camels Creek, and Brown Trout outnumbered Brook Trout during surveys in 2021 which was different than in 2015 when the reverse was true. Brook Trout have been stocked exclusively in

Camels Creek since the 1970s, and the Brown Trout found there are the result of fish that emigrated from Dell Creek to establish a self-sustaining population in Camels Creek. Camels Creek is slightly warmer than the other tributaries to Dell Creek, it has a bit more rock and gravel substrate, and it has also had privately funded habitat improvements completed on part of its length (private land) that favored Brown Trout. Brown Trout were more abundant in Camels Creek than in any other stream in the management group in 2021. In regional and statewide comparisons, total Brown Trout abundance was moderate, largely due to high natural reproduction. Abundance of yearling and adult Brown Trout were low, however, and preferred-length Brown Trout were not found.

Abundance of age 0 and age 1 Brown Trout in Camels Creek relative to larger size classes indicates Camels Creek is more of a Brown Trout nursery stream. This makes sense, as Camels Creek is a relatively small stream with flow rates ranging from 0.4-2.5 cfs at the three sampling locations. It should be noted that Camels Creek is not a functional trout stream in its upper reaches, with a lack of flow and warm water temperatures limiting the fish community to primarily warm water forage species as observed at the Bluebird Road sampling location (cold water IBI score = 10, Poor). However, in the short 0.75-mile stream distance from Bluebird Road downstream to Town Hall Road, Camels Creek more than quadrupled its flow from 0.4 cfs to 1.8 cfs as measured on July 12, 2021. This happens as Camels Creek flows through a wetland area receiving groundwater input and joins with an Unnamed Tributary 5029701. From Town Hall Road downstream to its confluence with Dell Creek, Camels Creek is a functional trout stream. Cold water fish IBI scores reflect this change, registering scores of 80 (Good) at the Town Hall Road and Simpson Road sampling locations.

Based on total trout abundance and levels of natural reproduction and recruitment of Brook and Brown Trout observed in 2021, Camels Creek is performing at the Class 1 level, and it is recommended to reclassify the stream as such. The Brown Trout population is self-sustaining, Brook Trout show the potential to be self-sustaining, and the trout are fully utilizing the available habitat in this small stream. Low numbers of larger adult trout are a function of the small stream size. Brown Trout appeared to have overtaken Brook Trout as the predominant species in Camels Creek in 2021 despite stocking exclusively Brook Trout. Camels Creek appeared to be serving as the nursery stream and source of natural reproduction that is fueling natural recruitment of Brown Trout in Dell Creek, where little natural reproduction occurs.

Brook Trout were the predominant trout species in Camels Creek in the recent past prior to being overtaken by Brown Trout, and it is desirable to return the stream to that condition. Despite its likely reclassification to Class 1, Brook Trout stocking should continue in Camels Creek in conjunction with a cessation of Brown Trout stocking in Dell Creek and a switch to Brook Trout stocking in that stream. Eight of the 10 streams in the Dell Creek watershed are dominated by Brook Trout with the two exceptions being Dell Creek and Camels Creek. Brook Trout numbers have increased in Dell Creek in recent years as well. All evidence (fish population data, stream temperature and habitat) indicates a natural tendency toward Brook Trout dominance in the Dell Creek watershed. Ceasing all Brown Trout stocking in the watershed and switching to Brook Trout stocking in Dell Creek should help to keep the balance in favor of Brook Trout. It should be noted that at the two sampling locations downstream of Town Hall Road (where Camels Creek was found to be a functional trout stream), mean adult Brook Trout abundance in 2021

was 64 fish/mile, which is above the minimum fishable population size for a stocked Wisconsin trout stream established in DNR trout stocking guidance.

Camels Creek is eligible for SBE, but the most recent DNR easement acquisition outreach efforts along the stream occurred in 2014. Overlap with Sauk County streambank easement acquisition authority led the DNR to invest less acquisition effort along this stream. Renewed outreach efforts are recommended and should be focused on larger parcels of land with significant stream frontage to maximize public access opportunities and streambank protection offered under the easement. Small parcels with short distances of bank frontage, and parcels in the portion of upper Camels Creek mapped as intermittent should be excluded from the next round of outreach. Any future habitat projects along Camels Creek should avoid utilizing techniques that favor Brown Trout to prevent them from strengthening their foothold in the stream. Some limited fee-title acquisition authority exists along Camels Creek downstream of Simpson Road via Dell Creek Wildlife Area, and future fee-title acquisitions will be at the discretion of the area Wildlife Biologist.

UNNAMED STREAM 1298800

Unnamed Stream 1298800, a tributary to Hulburt Creek, was Class 1 trout water prior to this evaluation. Sampling in 2021 found the 7th highest abundance of Brook Trout out of 12 streams in the Dell Creek and Hulburt Creek watersheds. In regional and statewide comparisons, total Brook Trout abundance was moderate, YOY abundance was low, yearling abundance was moderate, and adult and preferred-length fish were not found.

Age 0 and yearling Brook Trout were both collected from Unnamed Stream 1298800 despite the lack of any history of Brook Trout stocking. The stream is relatively small, with a flow rate of 1.4 cfs measured at the single sampling location, and the cold water fish IBI score was 50 (Fair). The stream flows through a low wetland area and is relatively undisturbed. Banks and associated in-stream habitat are in good shape overall. Abundance was only moderate overall, however based on the low flow volume, pure sand substrate, and the size of the stream (mean width = 1.8 meters, relatively shallow depth), it appears that the Brook Trout are fully utilizing the available habitat. Therefore, Unnamed Stream 1298800 meets the definition of a Class 1 trout stream and no change in classification is recommended. Adult Brook Trout were not found in the stream, but this was not surprising considering the size of the stream and lack of habitat that would support large trout. This stream should be recognized for its value as a Brook Trout nursery stream, particularly when considering that its contribution of cold flow and trout recruitment to Hulburt Creek help the latter to live up to its potential as a trout stream.

Due to the small size of the stream, stocking additional fingerling trout is not likely to affect an increase in Brook Trout abundance or size structure, and stocking is not recommended. Likewise, an investment in intensive in-stream habitat work is not likely to affect major changes in the trout population and habitat dollars should be spent elsewhere. Unnamed Stream 1298800 is not likely to receive much fishing pressure from anglers and the current fishing regulation (county base regulation) offers the trout population sufficient protection from harvest. No regulation change is recommended.

Unnamed Stream 1298800 is not eligible for SBE, however, the lower 0.75 mile of the stream including the entire perennially flowing portion of the stream are already under state ownership through Hulburt Creek Fishery Area. Some minimal opportunity exists under current NRB approved project boundaries for fee title acquisition along two unnamed, intermittent tributaries to Unnamed Stream 1298800. Acquisition of eligible parcels within that area of the project boundary should be considered if opportunities arise, however active pursuit of those parcels is not recommended at this time.

UNNAMED STREAM 1297700

Unnamed Stream 1297700, a tributary to Dell Creek, was unclassified prior to this evaluation and had not been surveyed previously. Sampling in 2021 found the 8th highest abundance of Brook Trout out of 12 streams in the Dell Creek and Hulburt Creek watersheds. In regional and statewide comparisons, total Brook Trout abundance was moderate; YOY were not found, yearling abundance was high, and adult and preferred-length fish were not found. Two Brown Trout (one age 0 fish and one yearling) were collected at the single sampling location, and total Brown Trout abundance ranked 6th out of 7 streams in the management area where Brown Trout were found. Brown Trout abundance was low by all metrics when compared regionally and statewide.

Age 0 and yearling trout were collected from Unnamed Stream 1297700 despite the lack of any stocking history. The stream was relatively small, with a flow rate of 1.1 cfs and a mean width of 1.6 meters measured at the single sampling location. Water depths were generally only a few inches and the bottom substrate is primarily sand with a little bit of organic matter. The cold water fish IBI score was 40 (Fair) and central mudminnow, a tolerant species, was the most abundant species collected. This indicates that conditions in the stream may occasionally be a bit harsh. Nevertheless, the stream flows through a wooded area and is relatively undisturbed over its entire length. Banks and associated in-stream habitat are in good shape overall. Trout abundance was relatively low, but this was purely a function of the size of the stream, and it appears that trout are fully utilizing the available habitat. Although age 0 Brook Trout were not collected in the survey, the presence of yearling fish indicated that natural reproduction was occurring somewhere in the stream. Brown Trout found in the stream were likely a result of its connection to Dell Creek which was managed for Brown Trout historically. Unnamed Stream 1297700 meets the definition of a Class 1 trout stream, and it is recommended that the stream be classified as such for its entire 1.2-mile length. Adult trout were not found in the stream which should be recognized for its value as a nursery stream, particularly when considering that its contribution of cold flow and trout recruitment to Dell Creek help the latter to live up to its potential as a trout stream.

Due to the small size of the stream, stocking additional fingerling trout is not likely to affect an increase in trout abundance or size structure, and stocking is not recommended. Likewise, an investment in intensive in-stream habitat work is not likely to affect major changes in the trout population and habitat dollars should be spent elsewhere. Unnamed Stream 1297700 is not likely to receive much fishing pressure from anglers and the current fishing regulation (county base regulation) offers the trout population sufficient protection from harvest. No regulation change is recommended.

Unnamed Stream 1297700 is not eligible for SBE, however, nearly the entire length of the stream is already under state ownership via Dell Creek Wildlife Area. Additional acquisition opportunity along this stream is not possible under the current NRB approved

acquisition boundary for Dell Creek Wildlife Area. However, the length of stream not under state ownership is very small (0.2 mile) and further acquisition along this stream is not a priority. No NRB acquisition boundary adjustments are recommended for Dell Creek Wildlife Area on behalf of Fisheries Management at this time.

UNNAMED STREAM 1297200

Unnamed Stream 1297200, a tributary to Dell Creek, was unclassified prior to this evaluation with previous fishery data limited to two surveys in 2009 and one in 2004. Those surveys indicated the presence of Brook and Brown Trout at low abundance as well as mottled sculpins and other forage species. Sampling in 2021 found the 9th highest abundance of Brook Trout out of 12 streams in the Dell Creek and Hulburt Creek watersheds. In regional and statewide comparisons, total Brook Trout abundance was low, and this was true for YOY, yearling and adult fish. Preferred-length Brook Trout were not collected from Unnamed Stream 1297200.

Natural reproduction and recruitment of Brown Trout were also evident in Unnamed Stream 1297200. Sampling in 2021 found the 3rd highest abundance of Brown Trout out of seven streams in the Dell Creek and Hulburt Creek watersheds where Brown Trout were found. In regional and statewide comparisons, total Brown Trout abundance was low, while abundance of YOY, yearling and adult fish ranged from low to moderate. Preferred-length Brown Trout were not collected from Unnamed Stream 1297200.

Age 0, yearling and adult trout (mixed fishery) were all collected from Unnamed Stream 1297200 despite a lack of any history of trout stocking. The stream is relatively small, with an average flow rate of 1.9 cfs and average width of 2.8 meters at two sampling locations in 2021. While abundance of either trout species by itself was low, total trout abundance was moderate and comparable to streams in the management group of similar size. Unnamed Stream 1297200 meets the definition of a Class 1 trout stream and should be reclassified as such. The classification should extend from Town Hall Road downstream to the mouth, a distance of 2.5 miles. The stream is relatively small, trout abundance is low, there is no public streambank access, and the stream is not likely to receive significant fishing pressure from anglers. Thus, the county base trout fishing regulation offers sufficient protection to the trout population and no change is needed.

During the first visit to the stream on July 19, 2021, the flow channel was hard to define upstream of Town Hall Road and appeared to be dry despite being mapped as perennial water, while there was an apparent channel with some standing water in it (but no flow) on the downstream side of Town Hall Road. The stream becomes functional trout water between Town Hall Road and Briar Bluff Road, likely through significant groundwater input in that reach. The stream had a flow rate of 1.7 cfs at Briar Bluff Road on July 19. Cold water fish IBI scores were 60 (Good) and 70 (Good) at the two sampling locations indicated that the stream is a quality cold water resource despite some degradation of the physical habitat.

It should be noted that although the trout population was fully utilizing the available habitat in its current form in 2021 and cold water fish IBI scores were good, the physical stream habitat was significantly degraded, probably more so than any other stream in the management group. The stream was wide and relatively shallow with steeply eroded banks in several locations with occasional splits into multiple channels. Bank erosion in

the old cattle pasture downstream of Briar Bluff Road was particularly bad. This stream is currently eligible for SBE and acquisition should be pursued along parcels with extensive two-bank frontage. Public ownership of the banks along this stream would provide access for anglers, but more importantly would protect the banks from further degradation and would open the door for the DNR to undertake habitat improvement projects on the stream. Simply sloping the eroded streambanks to reconnect the stream to its natural floodplain would go a long way toward halting destructive erosion and resultant sediment inputs to Unnamed Stream 1297200 as well as Dell Creek.

DELL CREEK

Dell Creek was Class 2 trout water prior to this evaluation with the most recent prior surveys occurring in 2017. Sampling in 2021 found the 10th highest total abundance of Brook Trout out of 12 streams in the Dell Creek and Hulburt Creek watersheds. The mean total Brook Trout catch rate was markedly higher in 2021 (83.1 fish/mile) than in 2017 (47.9 fish/mile) or 2013 (54.5 fish/mile). In regional and statewide comparisons however, total Brook Trout abundance was low, while abundance of YOY, yearling and adult fish was low to moderate. Preferred-length Brook Trout abundance was high. This makes sense because Dell Creek offers the best habitat for larger adult trout regardless of species of any stream in the watershed.

Dell Creek has been managed primarily for Brown Trout since 1996 with the only Brook Trout stockings being low numbers of surplus adult broodstock. Prior to that, fingerling Brook and Brown Trout were stocked concurrently dating back to the early 1970s. Today, Dell Creek is the only stream in the Dell-Hulburt management group that is actively managed for Brown Trout. Accordingly, sampling in 2021 found the second highest total abundance of Brown Trout out of seven streams where Brown Trout were found in the Dell Creek and Hulburt Creek watersheds after Camels Creek. In regional and statewide comparisons however, total Brown Trout abundance was low as was abundance of YOY and yearling fish. Abundance of adult and preferred-length Brown Trout were moderate because of good habitat for larger trout in the stream. The mean adult Brown Trout catch rate (110.3 fish/mile) was above the minimum fishable population standard of 50 fish/mile for stocked Wisconsin trout streams. It should be noted that Dell Creek was the only stream in the management group where Brown Trout larger than 20 inches were collected in 2021. However, Brown Trout abundance in Dell Creek (mean total catch rate) appears to have declined overall since 2013. Mean total abundance in 2021 was 195.8 fish/mile, higher than 2017 (170.4 fish/mile) but far lower than 2013 (311.5 fish/mile).

Low levels of natural reproduction and recruitment of Brook and Brown Trout were observed in Dell Creek in 2021 and the stream is not likely to maintain a significant adult trout fishery without the aid of stocking; the current Class 2 designation is accurate. Recruitment of naturally produced trout in Dell Creek (Brook or Brown) is largely a result of contributions from tributary streams with self-sustaining trout populations.

The reason for poor trout natural reproduction in Dell Creek is a lack of hard rock and gravel substrate; the stream bottom is primarily sand with occasional exposed areas of unbroken sandstone bedrock. Catch rates of adult and preferred-length trout are also relatively low but compare more favorably than catch rates of younger trout, both locally and beyond. Dell Creek is a relatively large trout stream for the area with a mean flow rate of 19.2 cfs (range 7.1-29.7 cfs) measured at the five sampling locations in 2021.

Cover for larger trout is abundant with deep bends, overhanging grass, undercut banks, root wads and other coarse woody structure all providing cover. While trout will never be highly abundant in Dell Creek due to limited natural reproduction and recruitment, the stream can support a low-density, high quality adult trout fishery due to the quality of the habitat for larger trout.

As mentioned during discussion of Camels Creek, it is recommended that fingerling trout stocking in Dell Creek be switched from Brown Trout to Brook Trout. Eight of the 10 streams in the Dell Creek watershed are dominated by Brook Trout with the two exceptions being Dell Creek and Camels Creek. The decline in Brown Trout abundance in Dell Creek since 2013 mentioned above may be at least partly the result of a reduction in stocking levels, which averaged 13,350 fingerling Brown Trout annually from 2001-2012 compared to 5,817 fingerlings annually from 2013-2019. It is interesting that the decline in Brown Trout stocking levels has coincided with a decline in Brown Trout abundance and an increase in Brook Trout abundance in Dell Creek. All evidence (fish population data, stream temperature and habitat) indicates a natural tendency toward Brook Trout dominance across the Dell Creek watershed. Switching to Brook Trout stocking in Dell Creek would bring active Brown Trout management in the watershed to an end. This should help to keep the balance in favor of Brook Trout watershed-wide and will hopefully lead to a continuing trend of Brook Trout replacing Brown Trout as the predominant trout species in Dell Creek.

Currently, Dell Creek falls under the county base trout regulation except for the reach from Coon Bluff Road upstream to South Avenue where only artificial lures are allowed, and all trout must be immediately released. This combination of regulations allows harvest in certain areas while protecting trout size structure in the highest quality and most heavily fished stream segment. With a shift in management from Brown Trout to Brook Trout, it is recommended that the regulation be changed to allow harvest of Brown and Rainbow Trout in this reach, while continuing to protect Brook Trout. Specifically, the proposed regulation would be no minimum length limit and a daily bag limit of five fish for Brown and Rainbow Trout, but all Brook Trout must be immediately released, and only artificial lures may be used. The management goal is to increase total Brook Trout abundance and abundance of larger adult trout. The specific management objectives are adult abundance ≥300 fish/mile and adult Brook Trout abundance ≥100 fish/mile.

Rainbow Trout stocked in Dell Creek are providing an additional catch and harvest opportunity for anglers. The electrofishing catch rate of legally harvestable Rainbow Trout was comparable to other nearby streams in Columbia County where Rainbow Trout are stocked. Age 0 Rainbow Trout collected during surveys of Dell Creek were from a stocking of surplus small fingerlings in early March 2021 (average length 2 inches). By July, the age 0 fish appeared to be surviving and growing well, with an average length of five inches and a very robust appearance. Dell Creek appears to be a suitable stream for stocking surplus Rainbow Trout and such stocking may occur again in the future as the need to stock out surplus fish from Nevin State Fish Hatchery arises. Changing the fishing regulation as outlined above will facilitate increased utilization of stocked fish.

Currently, significant portions of the land along Dell Creek are under public ownership as part of Dell Creek Wildlife Area. The DNR may pursue additional fee-title acquisitions within the NRB-approved project boundary for the wildlife area at the discretion of the area Wildlife Biologist. Beyond that, Dell Creek is also eligible for SBE with the most

recent landowner outreach effort occurring in 2014. Renewed outreach efforts are recommended and should be focused on larger parcels of land with significant stream frontage to maximize public access opportunities, potential habitat and angler access improvements and streambank protections offered under the easement.

HARRISON CREEK

Harrison Creek was Class 2 trout water prior to this evaluation with the most recent surveys occurring in 2015. Sampling in 2021 found the 11th highest abundance of Brook Trout out of 12 streams in the Dell Creek and Hulburt Creek watersheds. In regional and statewide comparisons, total Brook Trout abundance was low. YOY and adult abundances were low and yearling abundance was zero, indicating a lack of recruitment in Harrison Creek. The adult Brook Trout catch rate was below the minimum fishable population standard for a stocked stream in Wisconsin.

In 2021, natural recruitment was not observed and adult Brook Trout abundance was low despite a history of Brook Trout stocking dating back nearly 50 years. The lack of natural recruitment indicates that the Class 2 designation for Harrison Creek is appropriate. However, the lack of a fishable adult trout population after five decades of fingerling Brook Trout stocking indicates that continued fingerling trout stocking in Harrison Creek is a poor investment. It is recommended that fingerling trout stocking cease in Harrison Creek. Surplus adult brood stock Brook Trout may be stocked in Harrison Creek moving forward if hatchery staff are seeking suitable streams for surplus fish.

Public access to one mile of lower Harrison Creek including its confluence with Dell Creek exists via Mirror Lake State Park. Beaver activity in this stretch of Harrison Creek occasionally floods areas of the park and threatens roads and other infrastructure. Beaver control via the United States Department of Agriculture Animal and Plant Health Inspection Service (USDA APHIS) trappers may occasionally be needed to address the issue. Additional fee title acquisition is possible via the Harrison Creek Streambank Protection Fee Area, an NRB-approved project. Currently, one fee-title acquisition is in progress for approximately 42 acres including 0.4 mile of two-bank frontage on Harrison Creek. This would represent the first acquisition within the project area.

BEAVER CREEK

Beaver Creek was Class 2 trout water prior to this evaluation with the only prior survey completed by DNR Water Resources staff in 2016. Sampling in 2021 found the 12th highest abundance of Brook Trout out of 12 streams in the Dell Creek and Hulburt Creek watersheds. YOY and adult Brook Trout abundances were low and yearling abundance was zero. The adult Brook Trout catch rate fell well below the catch rate of 50 fish/mile that defines the minimum fishable population size for a stocked trout stream in Wisconsin. Preferred-length Brook Trout were not collected from Beaver Creek.

Sampling in 2021 found the 5th highest total abundance of Brown Trout out of seven streams where Brown Trout were found in the Dell Creek and Hulburt Creek watersheds. YOY abundance was zero while yearling and adult abundances were low. Preferred-length Brown Trout were not collected from Beaver Creek.

Despite the moderate level of Brook Trout, natural reproduction observed in Beaver Creek in 2021, natural recruitment was not observed. Adult Brook Trout abundance was

low despite an extensive history of Brook Trout stocking over two periods: 1972-1994 and 2010-2019. The lack of natural recruitment indicates that the Class 2 designation for Beaver Creek is appropriate. Cold water fish IBI scores of 80 (Good) at both sampling locations indicate Beaver Creek is a quality cold water stream. However, the lack of a fishable adult trout population after extensive stocking of fingerling Brook Trout stocking indicates that continued fingerling trout stocking in Beaver Creek is a poor investment It is recommended that fingerling trout stocking cease in Beaver Creek. Surplus adult brood stock Brook Trout may be stocked in Beaver Creek moving forward if hatchery staff are seeking suitable streams for surplus fish. The fishing regulation on Beaver Creek currently matches the special regulation section of Dell Creek because Beaver Creek joins Dell Creek in that reach, and the regulations match for ease of enforcement. For this reason, it is recommended that the regulation on Beaver Creek continue to match the regulation on Dell Creek from Coon Bluff Road to South Avenue.

Public access to Beaver Creek exists on the lower 0.75 mile of Beaver Creek via Dell Creek Wildlife Area. Current state ownership runs all the way to the current NRB-approved project boundary for that part of the wildlife area and no additional fee title access along Beaver Creek is possible currently. Beaver Creek is SBE eligible, and to date one easement has been purchased on one property on upper Beaver Creek above Coon Bluff Road providing access to 0.3 miles of stream. Moving forward, additional easement acquisition efforts should target parcels with significant stream frontage of 0.25 mile or more to maximize access and habitat protection and improvement potential.

BROOK TROUT GENETICS

Some of the trout streams in the management group such as Camels Creek, Beaver Creek and Harrison Creek have extensive Book Trout stocking histories. Other streams such as Dell Creek and Hulburt Creek have seen some limited Brook Trout stocking over the years, specifically since 2010 with limited numbers of surplus adult broodstock. However, many streams in the watershed have self-sustaining Brook Trout populations (some at high abundance) without any history of Brook Trout stocking. Genetic sampling is recommended to quantify the genetic origins of the Brook Trout across this management group. The primary goal is to determine if any of these Brook Trout populations, some of which were undiscovered prior 2021, are of native origins or have descended from domestic stocks utilized in the state hatchery system over the years. This genetic sampling should occur during the next round of rotational surveys of the group in 2027 or earlier if time and funding allow it.

MANAGEMENT RECOMMEDATION SUMMARY

- Implement no minimum length limit and five fish daily bag limit for Brown and Rainbow Trout, but all Brook Trout must be immediately released, and only artificial lures are allowed on Beaver Creek and Dell Creek from South Avenue downstream to Coon Bluff Road.

- Retain current trout fishing regulations on all remaining streams in the management group.

- Discontinue stocking of fingerling and surplus adult Brown Trout in Dell Creek in favor of stocking fingerling and surplus adult Brook Trout.

- Discontinue fingerling Brook Trout stocking in Beaver Creek and Harrison Creek.

- Continue to allow stocking of surplus adult broodstock Brook Trout in Camels Creek, Beaver Creek, Harrison Creek and Hulburt Creek.

- Quantify the genetic origins of Brook Trout in all streams in the management group through genetic testing.

- Retain current trout stream classifications for Dell Creek, Beaver Creek, Harrison Creek, Hulburt Creek and two unnamed tributaries to Hulburt Creek (1298800 and 3000387).

- Reclassify Camels Creek from Class 2 to Class 1.

- Reclassify unnamed streams 1296500, 1296600, 1296800, 1297200, 1297600 and 1297700 from unclassified to Class 1. All are tributaries to Dell Creek.

- Add unnamed streams 1296500 and 1296600 to the list of SBE eligible streams.

- Renew efforts to acquire streambank easements along Dell Creek, Camels Creek and Unnamed Stream 1296800. All are currently SBE eligible.

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TABLES AND FIGURES

Table 1. Land cover breakdown for the Dell Creek-Wisconsin River HUC-10 watershed (LW26) in the Lower Wisconsin River basin.

Land Cover	Percent of Watershed (2000)[1]
Forest (total)	46.0%
Broad-leaf deciduous	*34.4%*
Coniferous	*7.4%*
Mixed Deciduous/Coniferous	*4.2%*
Agriculture	30.2%
Wetland (total)	5.6%
Forested	*3.0%*
Emergent/wet meadow	*1.3%*
Lowland Shrub	*1.3%*
Grassland	13.5%
Open water	2.0%
Development	1.6%
Other	1.2%

1. Ripp et al. 2002

Table 2. Geographic and legal descriptions of the locations of the headwaters and outlets of streams in the Dell Creek-Hulburt Creek management group evaluated in 2021.

Waterbody	WBIC	Origin County	Origin Township	Origin T-R-S	Outlet County	Outlet Township	Outlet T-R-S	Receiving Waterbody	Stream Length (miles)
Dell Creek	1295200	Juneau	Seven Mile Creek	14N-4E-26	Sauk	Lake Delton	13N-6E-15	Wisconsin River	23.4
Camels Creek	1297500	Sauk	Winfield	13N-4E-24	Sauk	Dellona	13N-5E-21	Dell Creek	3.9
Beaver Creek	1297300	Sauk	Dellona	13N-5E-24	Sauk	Dellona	13N-5E-27	Dell Creek	2.4
Harrison Creek	1296400	Sauk	Delton	12N-6E-10	Sauk	Dellona	13N-5E-36	Dell Creek	4.5
Unnamed	1297700	Sauk	Dellona	13N-5E-9	Sauk	Dellona	13N-5E-16	Dell Creek	1.2
Unnamed	1297600	Sauk	Dellona	13N-5E-11	Sauk	Dellona	13N-5E-16	Dell Creek	2.8
Unnamed	1297200	Sauk	Dellona	13N-5E-30	Sauk	Dellona	13N-5E-34	Dell Creek	4.3
Unnamed	1296800	Sauk	Excelsior	12N-5E-10	Sauk	Excelsior	12N-5E-2	Dell Creek	1.7
Unnamed	1296600	Sauk	Delton	12N-6E-17	Sauk	Excelsior	12N-5E-1	1296500	3.3
Unnamed	1296500	Sauk	Delton	12N-6E-17	Sauk	Dellona	13N-5E-36	Dell Creek	4.3
Hulburt Creek	1298500	Sauk	Dellona	13N-5E-3	Sauk	Dellona	13N-6E-9	Wisconsin River	6.5
Unnamed	1298800	Juneau	Lyndon	14N-5E-25	Sauk	Delton	13N-6E-6	Hulburt Creek	1.7
Unnamed	3000387	Sauk	Dellona	13N-5E-12	Sauk	Dellona	13N-5E-1	Hulburt Creek	0.6

Table 3. Stocking quotas for streams in the Dell Creek-Hulburt Creek stream management group prior to the 2021 evaluation.

Waterbody	Trout Class	Species[1]	Strain[2]	Age Class	Number	Mark[3]
Beaver Creek	2	BKT	SW FERAL	Large Fingerling	293	U
Beaver Creek	2	BKT	SW FERAL	Adult	50	AD
Camels Creek	2	BKT	SW FERAL	Large Fingerling	502	U
Camels Creek	2	BKT	SW FERAL	Adult	50	AD
Dell Creek	2	BRT	TCSF	Small Fingerling	5,335	U
Dell Creek	2	BRT	TCSF	Adult	40	AD
Dell Creek	2	BKT	SW FERAL	Adult	50	AD
Dell Creek	2	RBT	ERWIN	Small Fingerling	50	U
Dell Creek	2	RBT	ERWIN	Yearling	1,601	U
Harrison Creek	2	BKT	SW FERAL	Large Fingerling	467	U
Hulburt Creek	1, 2	BKT	SW FERAL	Adult	50	AD

1. BKT=Brook Trout, BRT=Brown Trout, RBT=Rainbow Trout.
2. SW Feral=Southwest Feral, TCSF=Timber Coulee Southwest Feral
3. AD=Adipose fin clip, U=Unmarked

Table 4. Description of trout sampling locations for the Dell Creek-Hulburt Creek stream group during the 2021 evaluation. Classified streams are sampled on a 6-year rotation. Unclassified streams were sampled in 2021 to assess their potential to support trout.

Waterbody[1]	WBIC	Trout Class[2]	Stream Order	Location Name (site number)	Start Latitude	Start Longitude	End Latitude	End Longitude
Dell Creek	1295200	2	3	12m US CTH HH (128)	43.62966	-89.94154	43.63036	-89.94263
Dell Creek	1295200	2	3	30m US Town Hall Rd. (115)	43.60979	-89.91796	43.61064	-89.91888
Dell Creek	1295200	2	3	14m US CTH P (122)	43.59119	-89.89952	43.59219	-89.88300
Dell Creek	1295200	2	4	249m DS South Ave. (114)	43.57512	-89.88587	43.57642	-89.88731
Dell Creek	1295200	2	4	East of Simpson Rd. (119)	43.56725	-89.87287	43.56829	-89.56829
Beaver Creek	1297300	2	2	20m US Coon Bluff Rd. (120)	43.58513	-89.86686	43.40996	-89.38776
Beaver Creek	1297300	2	3	30m US South Ave. (113)	43.57579	-89.88646	43.57715	-89.88589
Camels Creek	1297500	2	1	115m DS Bluebird Lane (124)	43.59216	-89.92592	43.59253	-89.92706
Camels Creek	1297500	2	2	125m DS Town Hall Rd. (126)	43.58764	-89.91613	43.58759	-89.91705
Camels Creek	1297500	2	2	150m DS Simpson Rd. (121)	43.58714	-89.90021	43.58676	-89.90124
Harrison Creek	1296400	2	2	113m DS Shady Lane (116)	43.54810	-89.83217	43.54757	-89.83140
Harrison Creek	1296400	2	3	20m US Mirror Lake Rd. (127)	43.55434	-89.83695	43.63711	-89.83494
UNT Dell Creek	1296500	U	2	28m US Mirror Lake Rd. (14)	43.54206	-89.83685	43.54184	-89.83569
UNT Dell Creek	1296500	U	3	130m DS Hwy 23 (15)	43.54808	-89.85051	43.54782	-89.85012
Unnamed Stream	1296600	U	2	152m DS N. Reedsburg Rd. (19)	43.54161	-89.84958	43.54057	-89.84962
UNT Dell Creek	1296800	U	2	120m DS Hwy 23 (13)	43.54792	-89.87370	43.54807	-89.87405
UNT Dell Creek	1297200	U	2	156m DS Briar Bluff Rd. (20)	43.56051	-89.89759	43.56075	-89.89759
UNT Dell Creek	1297200	U	2	131m DS Simpson Rd. (18)	43.55746	-89.88581	43.55745	-89.88680
UNT Dell Creek	1297600	U	2	20m US Oak Hill Rd (12)	43.61145	-89.88297	43.61176	-89.88273
UNT Dell Creek	1297600	U	2	160m US mouth (17)	43.60233	-89.90205	43.60320	-89.90134
UNT Dell Creek	1297700	U	2	DS North Ave (16)	43.61215	-89.90846	43.61314	-89.90775
UNT Hulburt Creek	1298800	1	3	108m DS Lage Rd. (118)	43.63732	-89.83495	43.63708	-89.83495
Hulburt Creek	1298500	1	2	115m DS Birchwood Rd. (125)	43.36359	-89.83665	43.63641	-89.83759
Hulburt Creek	1298500	1	3	30m US DNR Bridge (123)	43.62370	-89.80759	43.62474	-89.80918
Hulburt Creek	1298500	1	3	Clara/Trout Rd. (117)	43.62381	-89.79414	43.62376	-89.79539

1. UNT=Unnamed Tributary
2. U=Unclassified

Table 5. Sampling station metrics for streams in the Dell Creek-Hulburt Creek group during the 2021 evaluation.

Waterbody[1]	Site Number (map)[2]	Date	Equipment	Mean Width (m)	Station length (m)	CPUE factor	Flow rate (cfs)[3]	Stream temp (F)	Dissolved oxygen (ppm)	n species	Coldwater IBI Score
Dell Creek	128	07/06/2021	Backpack	4.1	105	15.3	7.1	70		8	30 (FAIR)
Dell Creek	115	07/06/2021	Barge	4.2	122	13.2	12.7	66		9	40 (FAIR)
Dell Creek	122	07/06/2021	Barge	5.3	175	9.2	18.0	64		8	70 (GOOD)
Dell Creek	114	07/09/2021	Barge	6.9	245	6.6	28.3	57	9.5	9	60 (GOOD)
Dell Creek	119	07/09/2021	Barge	5.7	210	7.7	29.7	56	9.4	10	50 (FAIR)
Beaver Creek	120	06/28/2021	Backpack	1.7	100	16.1	1.1	64		2	80 (GOOD)
Beaver Creek	113	06/28/2021	Backpack	1.7	100	16.1	3.2	55		3	80 (GOOD)
Camels Creek	124	07/12/2021	Backpack	1.8	100	16.1	0.4	67	8.9	5	10 (POOR)
Camels Creek	126	07/12/2021	Backpack	2.3	100	16.1	1.8	58	8.7	6	80 (GOOD)
Camels Creek	121	07/12/2021	Backpack	3.0	105	15.3	2.5	57	9.5	8	80 (GOOD)
Harrison Creek	116	07/08/2021	Backpack	1.7	100	16.1	2.8	54	9.2	3	80 (GOOD)
Harrison Creek	127	07/08/2021	Backpack	3.1	100	16.1	1.8	54	8.7	5	80 (GOOD)
1296500	14	07/16/2021	Backpack	1.7	111	14.5	1.4	64	5.8	3	0 (VERY POOR)
1296500	15	06/21/2021	Backpack	3.4	100	16.1	1.8	56	9.5	5	90 (EXCELLENT)
1296600	19	07/19/2021	Backpack	2.0	117	13.7	0.7	59	9.4	3	90 (EXCELLENT)
1296800	13	06/21/2021	Backpack	2.6	100	16.1	1.1	62	9.7	4	90 (EXCELLENT)
1297200	20	07/19/2021	Backpack	2.7	110	14.5	1.8	60	9.3	4	70 (GOOD)
1297200	18	07/23/2021	Backpack	2.8	105	15.3	2.5	55	9.5	9	60 (GOOD)
1297600	12	06/23/2021	Backpack	1.5	100	16.1	0.7	53	11.2	1	90 (EXCELLENT)
1297600	17	06/23/2021	Backpack	2.5	100	16.1	2.2	54	11.1	5	80 (GOOD)
1297700	16	07/23/2021	Backpack	1.6	106	15.2	1.1	60	8.5	7	40 (FAIR)
UNT Hulburt Creek	118	07/01/2021	Backpack	1.8	108	15.5	1.4	67		6	50 (FAIR)
Hulburt Creek	125	07/01/2021	Backpack	1.5	100	16.1	1.1	59		7	60 (GOOD)
Hulburt Creek	123	07/28/2021	Barge	3.7	129	12.5	5.3	65	6.0	11	40 (FAIR)
Hulburt Creek	117	07/01/2021	Barge	3.5	105	15.3	7.1	62		8	50 (FAIR)

1. UNT=Unnamed Tributary
2. Refer to Figure 1 for the mapped location of each site.
3. cfs=cubic feet per second

Table 6. Brook Trout CPUE (fish/mile) percentile breakdown for stream surveys conducted on Class 1 trout streams in the Driftless Area and statewide where at least one trout was collected, 2012-2021.

	CPUE total	(All sizes)	CPUE age 0	(<4.0 inches)	CPUE age 1	(4.0-6.9 inches)	CPUE adult	(≥7 inches)	CPUE preferred	(≥10 inches)
Percentile	Driftless Area	Statewide	Driftless Area	Statewide	Driftless Area	Statewide	Driftless Area	Statewide	Driftless Area	Statewide
10	15.1	22.9	16	16.1	12.4	16.1	12.8	15.3	6.5	5.7
25	53.0	96.6	46	45.3	30.5	48.3	30	32.2	11.1	10.3
35	107.1	174.7	68.6	72.4	44.9	80.5	47.9	48.3	14.3	12.8
50 (median)	219.9	336.8	128.7	145.3	80.5	149.2	80.5	80.5	16.1	16.4
65	402.3	579.7	209.2	241.4	150.9	257.2	124	129.4	29.1	27.5
75	590.1	772.5	321.9	365.5	234.2	366.7	177.7	185.2	37.5	37.4
90	1223.0	1488.4	787.1	812.3	548.7	662.7	347	344	64.4	64.4

Table 7. Brown Trout CPUE (fish/mile) percentile breakdown for fishery surveys conducted on Class 1 trout streams in the Driftless Area and statewide where at least one trout was collected, 2012-2021.

	CPUE total	(All sizes)	CPUE age 0	(<4.0 inches)	CPUE age 1	(4.0-7.9 inches)	CPUE adult	(≥ 8 inches)	CPUE preferred	(≥12 inches)
Percentile	Driftless Area	Statewide	Driftless Area	Statewide	Driftless Area	Statewide	Driftless Area	Statewide	Driftless Area	Statewide
10	108.3	39.7	15.1	12.5	27.9	21	40.2	18.9	16.1	10.6
25	323.6	178.4	40.2	32.2	82.6	70.6	128.7	63.8	31.9	20.3
35	492.2	305.9	71.1	58.1	135.6	115	191.6	112.7	42.9	30.3
50 (median)	729.8	537.3	136.1	119.3	229.9	199.2	330.8	205.8	63.2	47.6
65	1121.4	880.6	256.1	247.5	383.2	337.2	509.7	341.9	85.8	72
75	1478.3	1241.7	405.4	402.1	518.8	482.8	677.6	479.2	115	91.4
90	2720	2203.1	856.7	933.5	877.1	836.6	1194.2	864.5	181.5	156.5

Table 8. Brook Trout CPUE; (fish/mile) for all sampling locations in the Dell Creek-Hulburt Creek stream management group in 2021.

Waterbody[1]	Site number (Map)	Date	CPUE-total	Age 0 (<4 inches)	Age 1 (4.0-6.9 inches)	Adult total (≥7 inches)	Adult<Preferred (7.0-9.9 inches)	Adult Preferred (≥10 inches)
Dell Creek	128	07/06/2021	122.6	0.0	15.3	107.3	61.3	46.0
Dell Creek	115	07/06/2021	26.4	0.0	0.0	26.4	13.2	13.2
Dell Creek	122	07/06/2021	165.6	9.2	18.4	138.0	110.4	27.6
Dell Creek	114	07/09/2021	39.4	0.0	0.0	39.4	26.3	13.1
Dell Creek	119	07/09/2021	61.3	0.0	7.7	53.7	23.0	30.7
Beaver Creek	120	06/28/2021	0.0	0.0	0.0	0.0	0.0	0.0
Beaver Creek	113	06/28/2021	96.6	80.5	0.0	16.1	16.1	0.0
Camels Creek	124	07/12/2021	0.0	0.0	0.0	0.0	0.0	0.0
Camels Creek	126	07/12/2021	466.8	225.4	128.8	112.7	112.7	0.0
Camels Creek	121	07/12/2021	214.6	168.6	30.7	15.3	15.3	0.0
Harrison Creek	116	07/08/2021	128.8	80.5	0.0	48.3	48.3	0.0
Harrison Creek	127	07/08/2021	32.2	16.1	0.0	16.1	16.1	0.0
UNT Dell Creek	14	07/16/2021	0.0	0.0	0.0	0.0	0.0	0.0
UNT Dell Creek	15	06/21/2021	2,688.3	708.3	1,175.1	804.9	724.4	80.5
Unnamed Stream	19	07/19/2021	233.9	123.8	82.6	27.5	27.5	0.0
UNT Dell Creek	13	06/21/2021	1,126.8	257.6	499.0	370.2	354.1	16.1
UNT Dell Creek	20	07/19/2021	87.8	43.9	14.6	29.3	29.3	0.0
UNT Dell Creek	18	07/23/2021	102.4	0.0	0.0	102.4	102.4	0.0
UNT Dell Creek	12	06/23/2021	80.5	0.0	32.2	48.3	48.3	0.0
UNT Dell Creek	17	06/23/2021	386.3	354.1	32.2	0.0	0.0	0.0
UNT Dell Creek	16	07/23/2021	102.4	0.0	102.4	0.0	0.0	0.0
UNT Hulburt Creek	118	07/01/2021	161.0	16.1	144.9	0.0	0.0	0.0
Hulburt Creek	125	07/01/2021	305.9	112.7	193.2	0.0	0.0	0.0
Hulburt Creek	123	07/28/2021	262.1	12.5	37.4	212.1	199.7	12.5
Hulburt Creek	117	07/01/2021	138.0	15.3	61.3	61.3	61.3	0.0

1.UNT=Unnamed Tributary

Table 9. Mean Brook Trout CPUE (fish/mile) for streams sampled in the Dell Creek-Hulburt Creek stream management group in 2021.

Waterbody[1]	WBIC	CPUE-total	Age 0 (<4 inches)	Age 1 (4.0-6.9 inches)	Adult total (≥7 inches)	Adult<Preferred (7.0-9.9 inches)	Adult Preferred (≥10 inches)
Dell Creek	1295200	83.1	1.8	8.3	73.0	46.8	26.1
Beaver Creek	1297300	48.3	40.2	0.0	8.0	8.0	0.0
Camels Creek	1297500	227.2	131.3	53.1	42.7	42.7	0.0
Harrison Creek	1296400	80.5	48.3	0.0	32.2	32.2	0.0
UNT Dell Creek	1296500	2,688.3	708.3	1,175.1	804.9	724.4	80.5
Unnamed Stream	1296600	233.9	123.8	82.6	27.5	27.5	0.0
UNT Dell Creek	1296800	1,126.8	257.6	499.0	370.2	354.1	16.1
UNT Dell Creek	1297200	95.1	22.0	7.3	65.9	65.9	0.0
UNT Dell 7600	1297600	233.4	177.1	32.2	24.1	24.1	0.0
UNT Dell 7700	1297700	102.4	0.0	102.4	0.0	0.0	0.0
UNT Hulburt 8800	1298800	161.0	16.1	144.9	0.0	0.0	0.0
Hulburt Creek	1298500	235.3	46.8	97.3	91.2	87.0	4.2

1. Data from the upstream site on 1296500 was excluded from mean CPUE calculations because the stream will not support trout at that location.

Table 10. Brown Trout CPUE (fish/mile) for all sampling locations in the Dell Creek-Hulburt Creek stream management group in 2021.

Waterbody	Site number (map)	Date	CPUE-total	Age 0 (<4 inches)	Age 1 (4.0-7.9 inches)	Adult total (≥8 inches)	Adult<Preferred (8.0-11.9 inches)	Adult Preferred (≥12 inches)
Dell Creek	128	07/06/2021	30.7	0.0	0.0	30.7	0.0	30.7
Dell Creek	115	07/06/2021	105.6	0.0	52.8	52.8	39.6	13.2
Dell Creek	122	07/06/2021	156.4	27.6	27.6	101.2	73.6	27.6
Dell Creek	114	07/09/2021	433.6	78.8	118.3	236.5	197.1	39.4
Dell Creek	119	07/09/2021	253.0	7.7	115.0	130.3	107.3	23.0
Beaver Creek	120	06/28/2021	16.1	0.0	16.1	0.0	0.0	0.0
Beaver Creek	113	06/28/2021	48.3	0.0	32.2	16.1	16.1	0.0
Camels Creek	124	07/12/2021	0.0	0.0	0.0	0.0	0.0	0.0
Camels Creek	126	07/12/2021	241.5	96.6	112.7	32.2	32.2	0.0
Camels Creek	121	07/12/2021	889.2	766.6	107.3	15.3	15.3	0.0
Harrison Creek	116	07/08/2021	0.0	0.0	0.0	0.0	0.0	0.0
Harrison Creek	127	07/08/2021	0.0	0.0	0.0	0.0	0.0	0.0
UNT Dell Creek	14	07/16/2021	0.0	0.0	0.0	0.0	0.0	0.0
UNT Dell Creek	15	06/21/2021	0.0	0.0	0.0	0.0	0.0	0.0
Unnamed Stream	19	07/19/2021	0.0	0.0	0.0	0.0	0.0	0.0
UNT Dell Creek	13	06/21/2021	0.0	0.0	0.0	0.0	0.0	0.0
UNT Dell Creek	20	07/19/2021	58.5	29.3	14.6	14.6	14.6	0.0
UNT Dell Creek	18	07/23/2021	117.1	73.2	14.6	29.3	29.3	0.0
UNT Dell Creek	12	06/23/2021	0.0	0.0	0.0	0.0	0.0	0.0
UNT Dell Creek	17	06/23/2021	32.2	0.0	32.2	0.0	0.0	0.0
UNT Dell Creek	16	07/23/2021	29.3	14.6	14.6	0.0	0.0	0.0
UNT Hulburt Creek	118	07/01/2021	0.0	0.0	0.0	0.0	0.0	0.0
Hulburt Creek	125	07/01/2021	0.0	0.0	0.0	0.0	0.0	0.0
Hulburt Creek	123	07/28/2021	12.5	0.0	12.5	0.0	0.0	0.0
Hulburt Creek	117	07/01/2021	214.6	0.0	168.6	46.0	30.7	15.3

Table 11. Mean Brown Trout CPUE (fish/mile) for streams sampled in the Dell Creek-Hulburt Creek stream management group in 2021.

Waterbody	WBIC	CPUE-total	Age 0 (<4 inches)	Age 1 (4.0-6.9 inches)	Adult total (≥7 inches)	Adult<Preferred (7.0-9.9 inches)	Adult Preferred (≥10 inches)
Dell Creek	1295200	195.8	22.8	62.7	110.3	83.5	26.8
Beaver Creek	1297300	32.2	0.0	24.1	8.0	8.0	0.0
Camels Creek	1297500	376.9	287.7	73.3	15.8	15.8	0.0
Harrison Creek	1296400	0.0	0.0	0.0	0.0	0.0	0.0
UNT Dell Creel	1296500	0.0	0.0	0.0	0.0	0.0	0.0
Unnamed Stream	1296600	0.0	0.0	0.0	0.0	0.0	0.0
UNT Dell Creek	1296800	0.0	0.0	0.0	0.0	0.0	0.0
UNT Dell Creek	1297200	87.8	51.2	14.6	22.0	22.0	0.0
UNT Dell 7600	1297600	16.1	0.0	16.1	0.0	0.0	0.0
UNT Dell 7700	1297700	29.3	14.6	14.6	0.0	0.0	0.0
UNT Hulburt 8800	1298800	0.0	0.0	0.0	0.0	0.0	0.0
Hulburt Creek	1298500	75.7	0.0	60.4	15.3	10.2	5.1

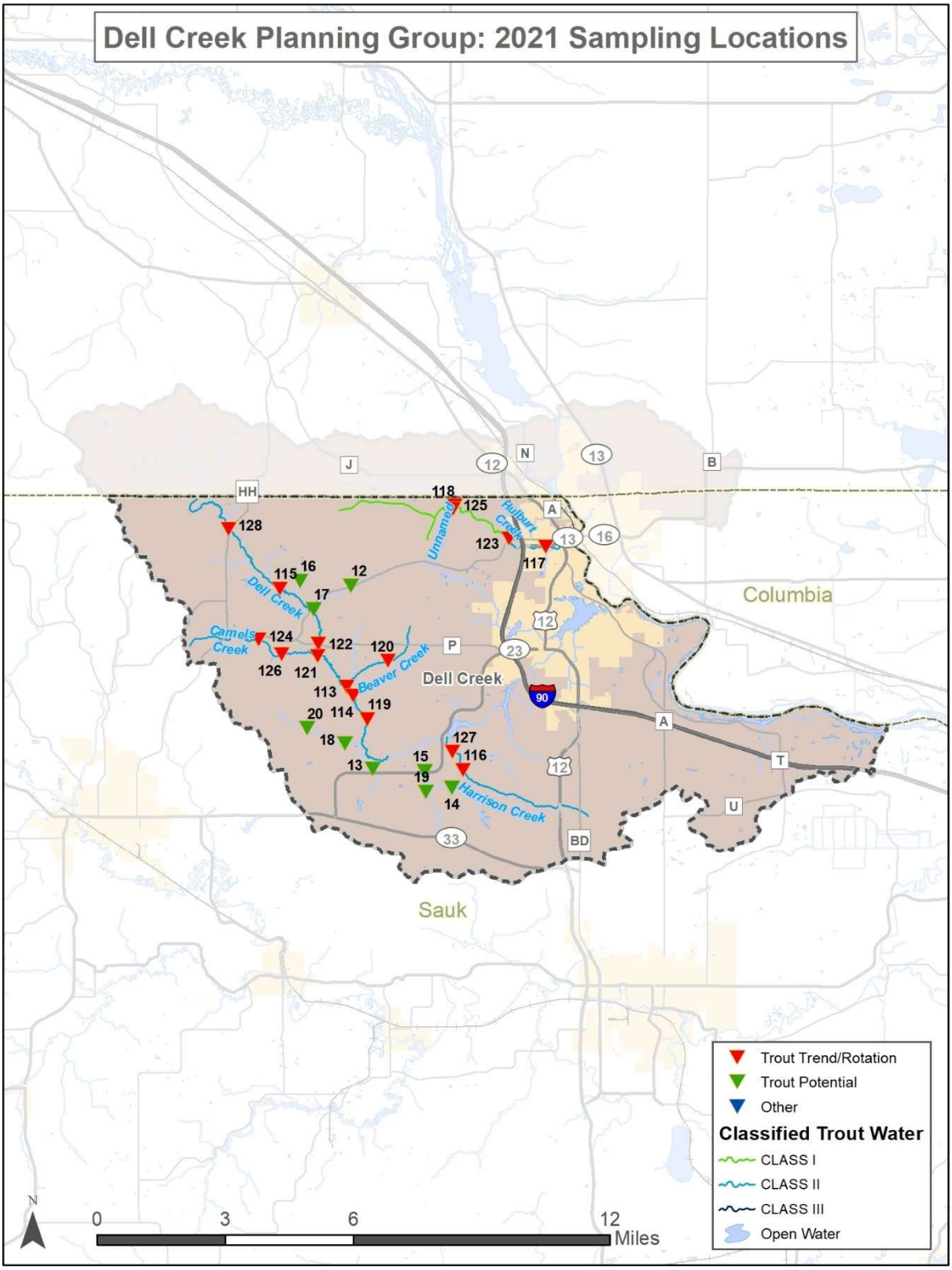

Figure 1. Trout class designations and 2021 fishery survey locations within the Dell Creek-Hulburt Creek stream management group.

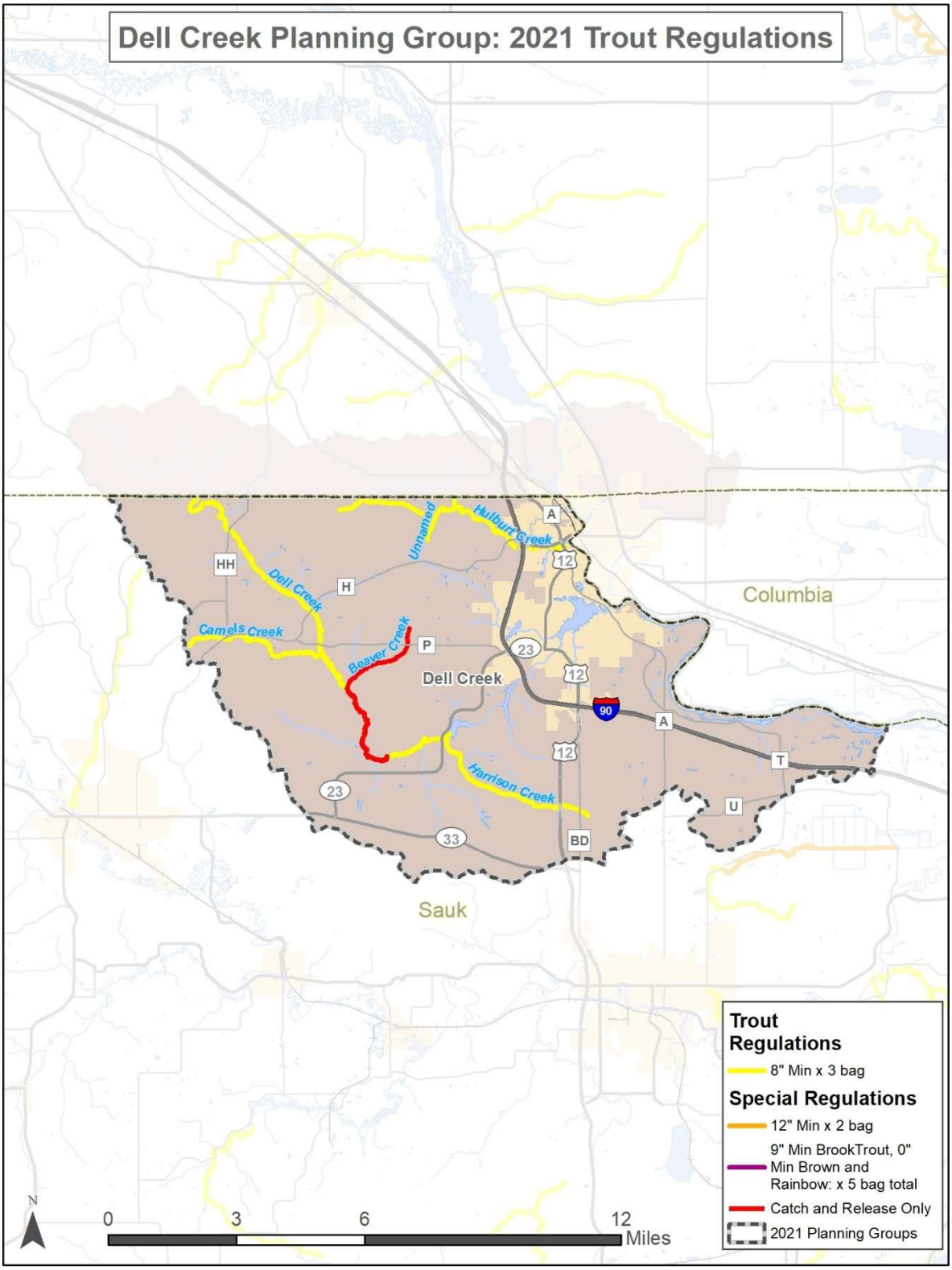

Figure 2. Current trout fishing regulations for classified trout streams in the Dell Creek-Hulburt Creek stream management group.

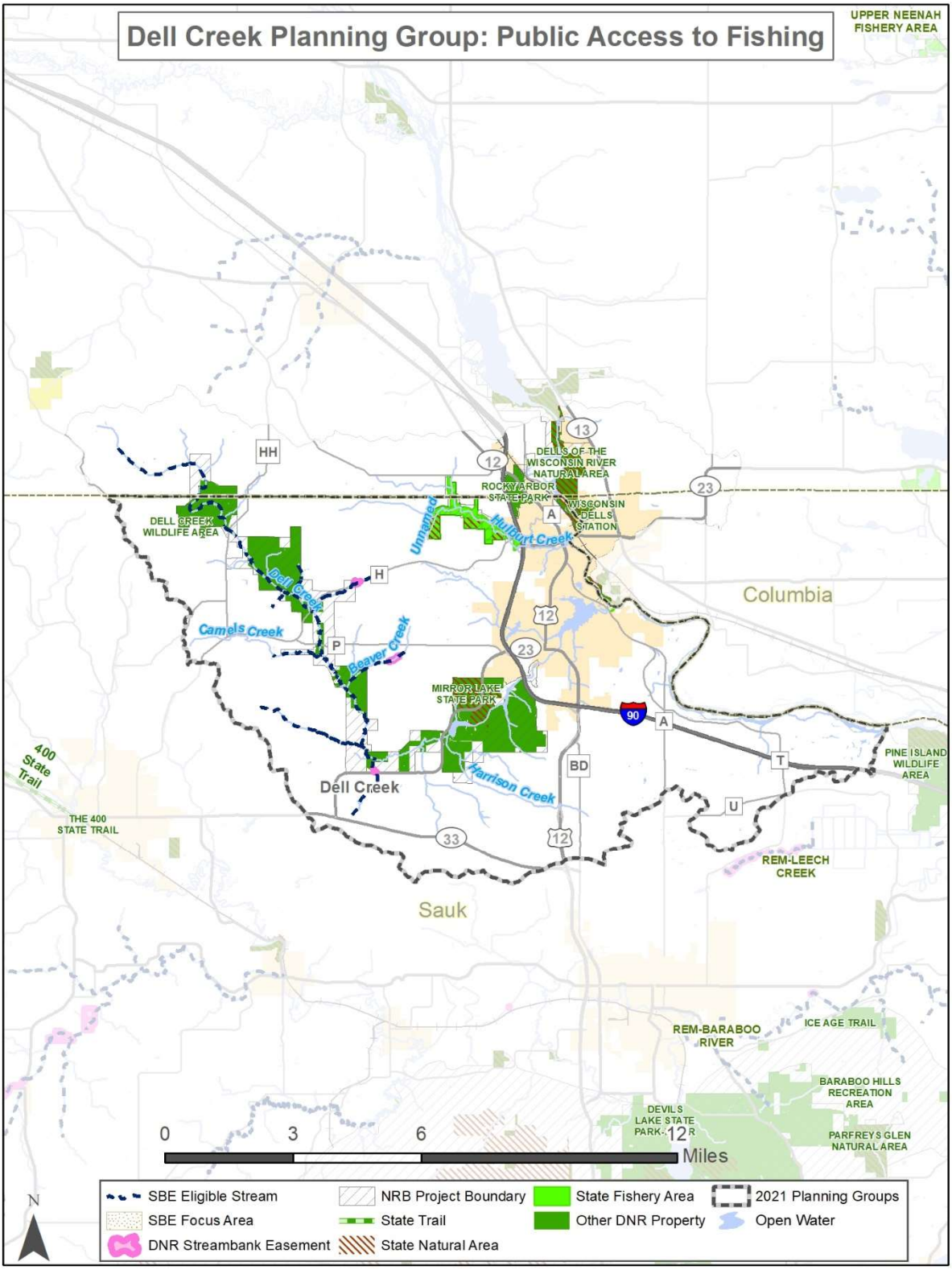

Figure 3. Public land access within the Dell Creek-Hulburt Creek stream management group.

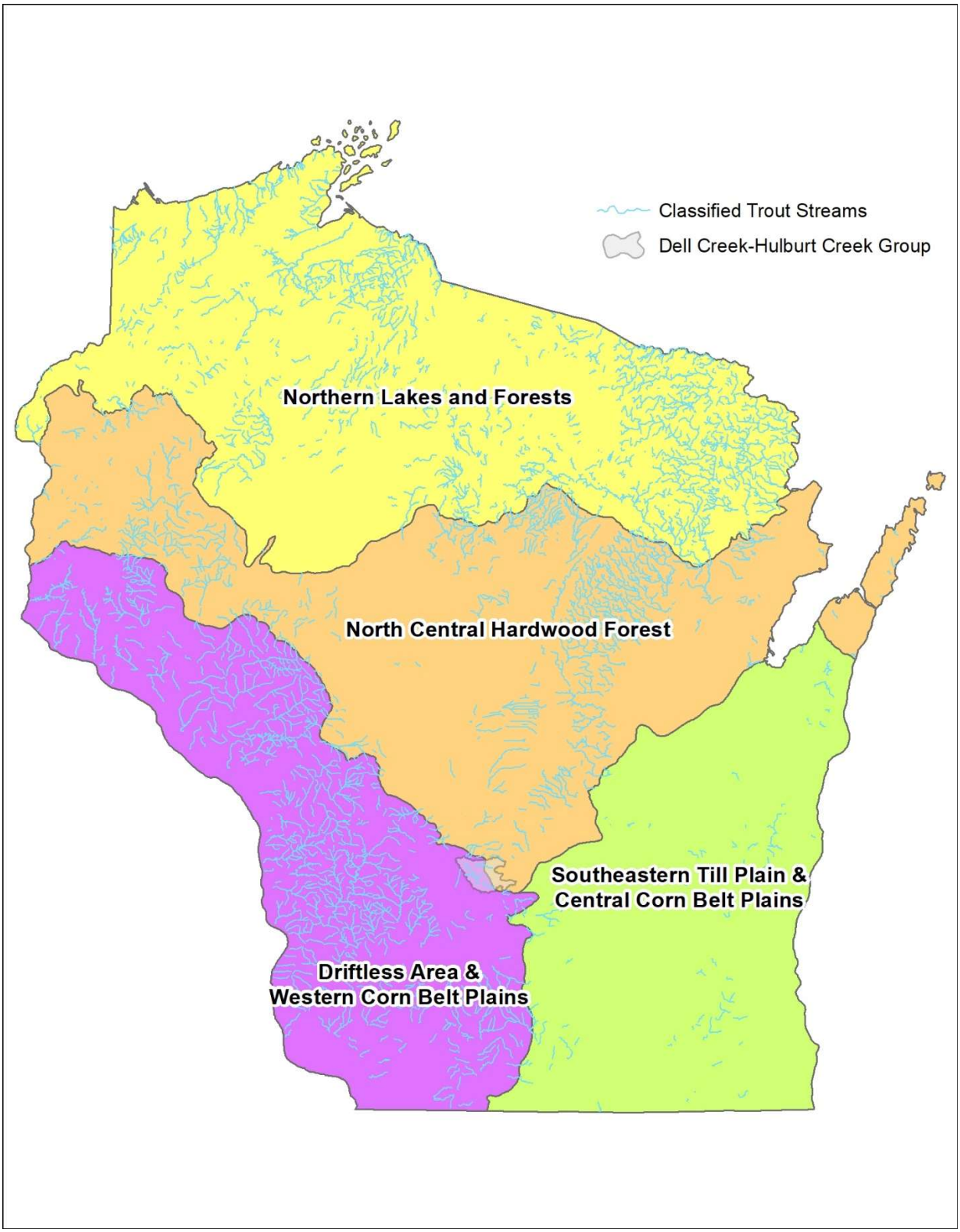

Figure 4. Level III Ecoregions of Wisconsin. The Dell Creek-Hulburt Creek stream management group is in the Driftless Area & Western Corn Belt Plains Ecoregion.

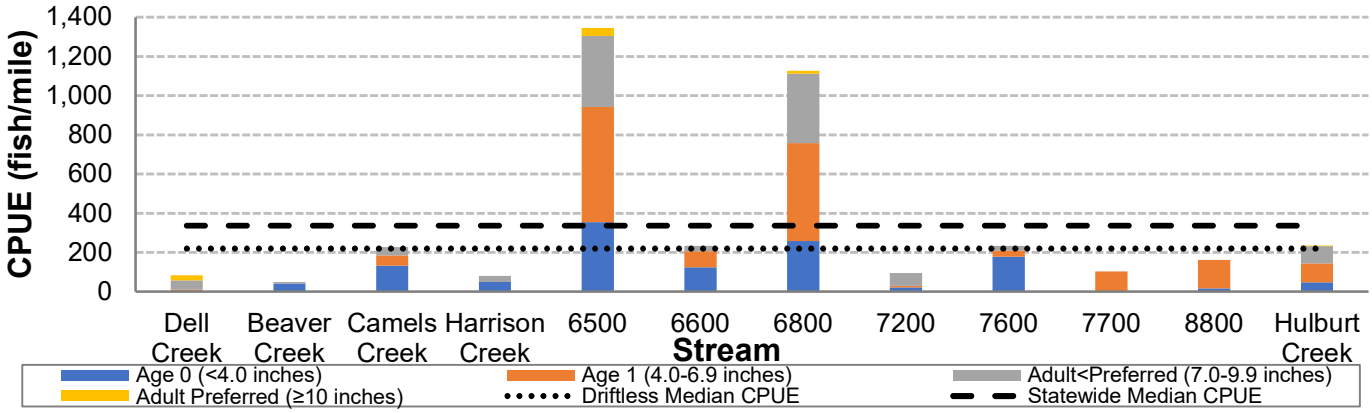

Figure 5. Mean total Brook Trout catch-per-unit effort (CPUE) by stream in the Dell Creek-Hulburt Creek stream management group in 2021. Unnamed streams are listed by the last 4 digits of the WBIC.

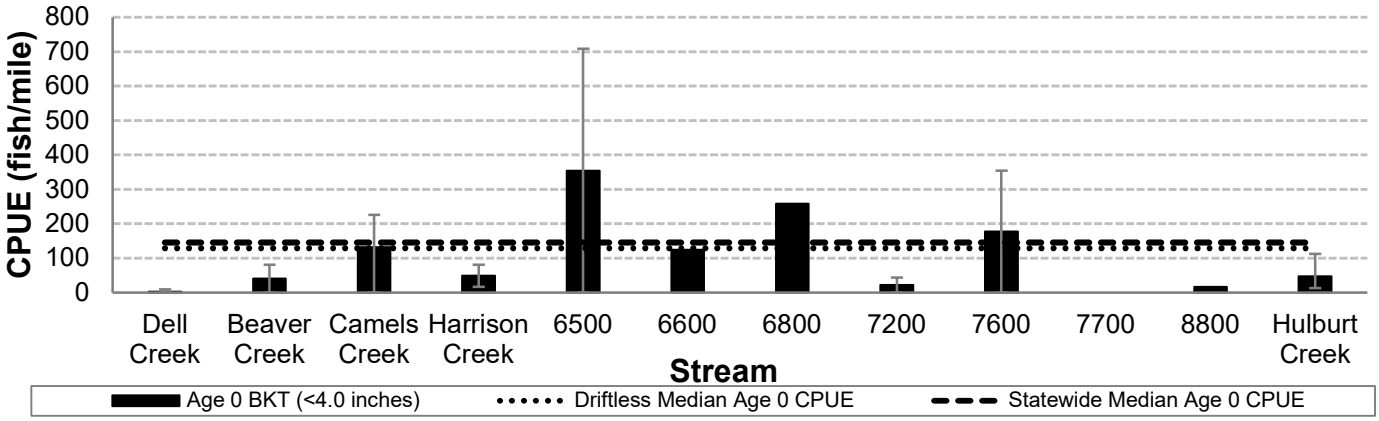

Figure 6. Mean age 0 Brook Trout catch-per-unit effort (CPUE) by stream in the Dell Creek-Hulburt Creek stream management group in 2021. Error bars represent the range of CPUE values observed for each stream or stream segment.

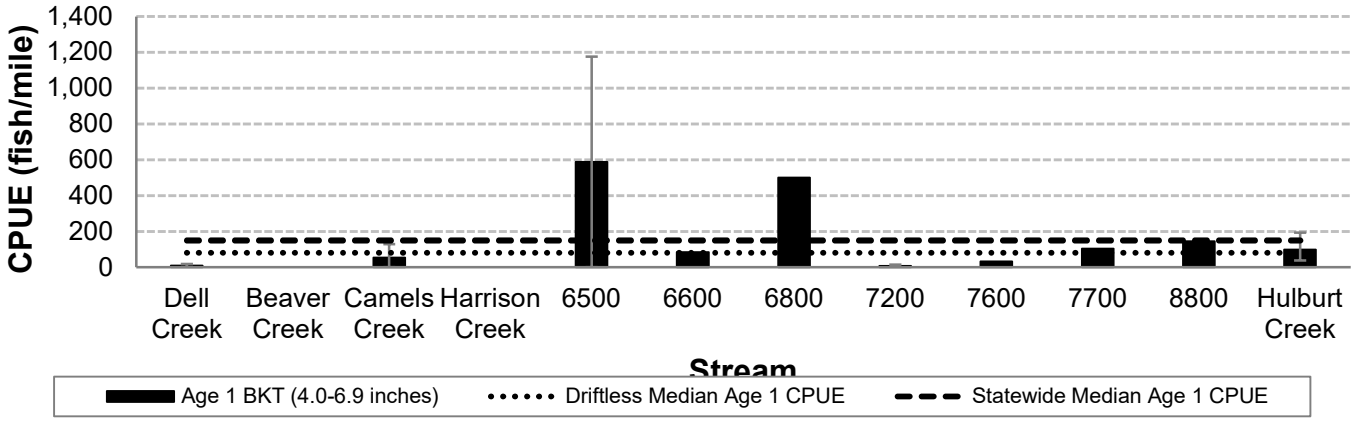

Figure 7. Mean age 1 Brook Trout catch-per-unit effort (CPUE) by stream in the Dell Creek-Hulburt Creek stream management group in 2021. Error bars represent the range of CPUE values observed for each stream or stream segment.

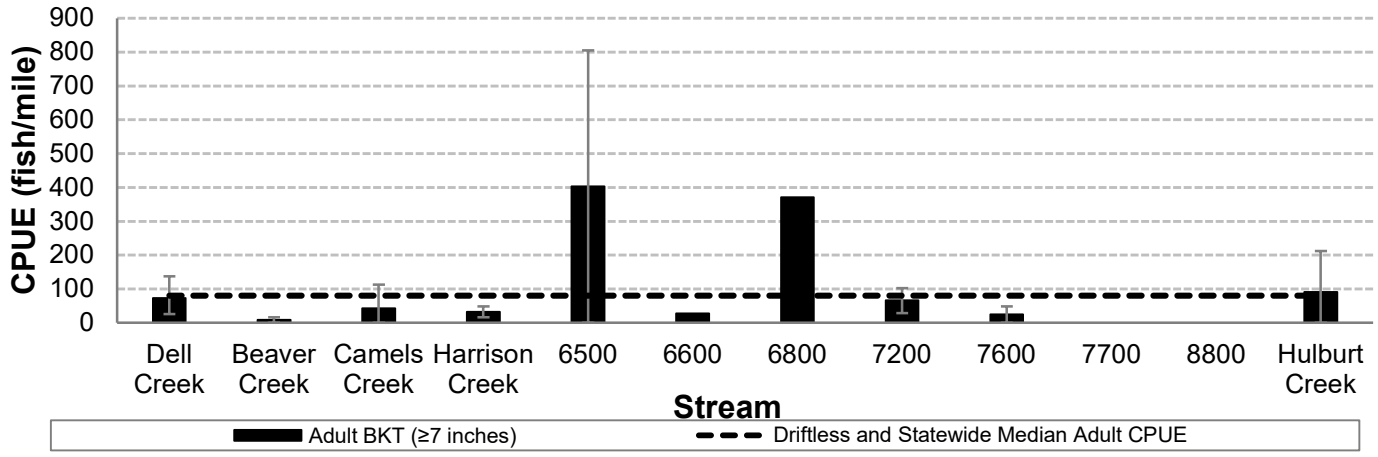

Figure 8. Mean adult Brook Trout catch-per-unit effort (CPUE) by stream in the Dell Creek-Hulburt Creek stream management group in 2021. Error bars represent the range of CPUE values observed for each stream or stream segment.

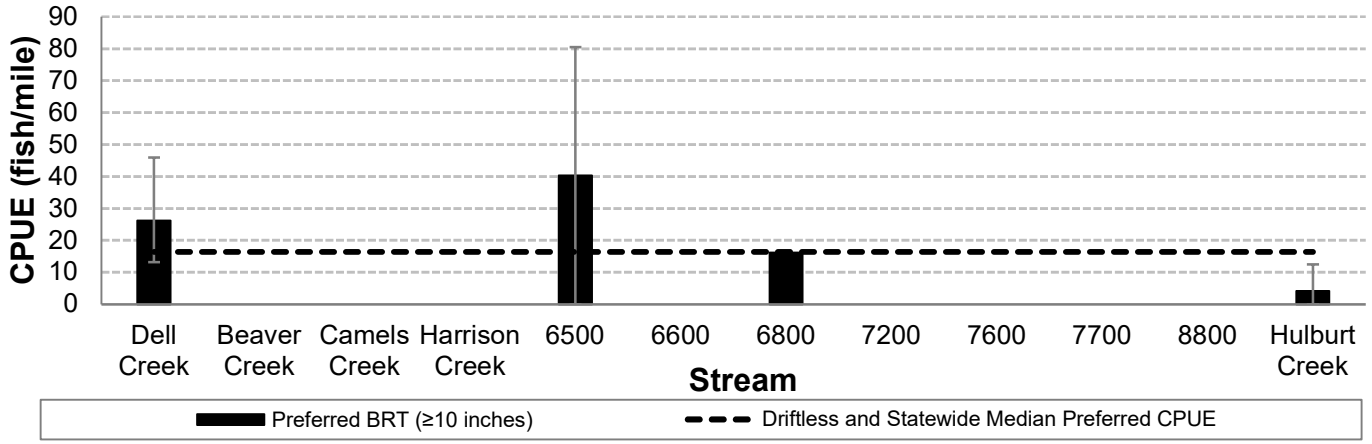

Figure 9. Mean preferred-length Brook Trout catch-per-unit effort (CPUE) by stream in the Dell Creek-Hulburt Creek stream management group in 2021. Error bars represent the range of CPUE values observed for each stream or stream segment.

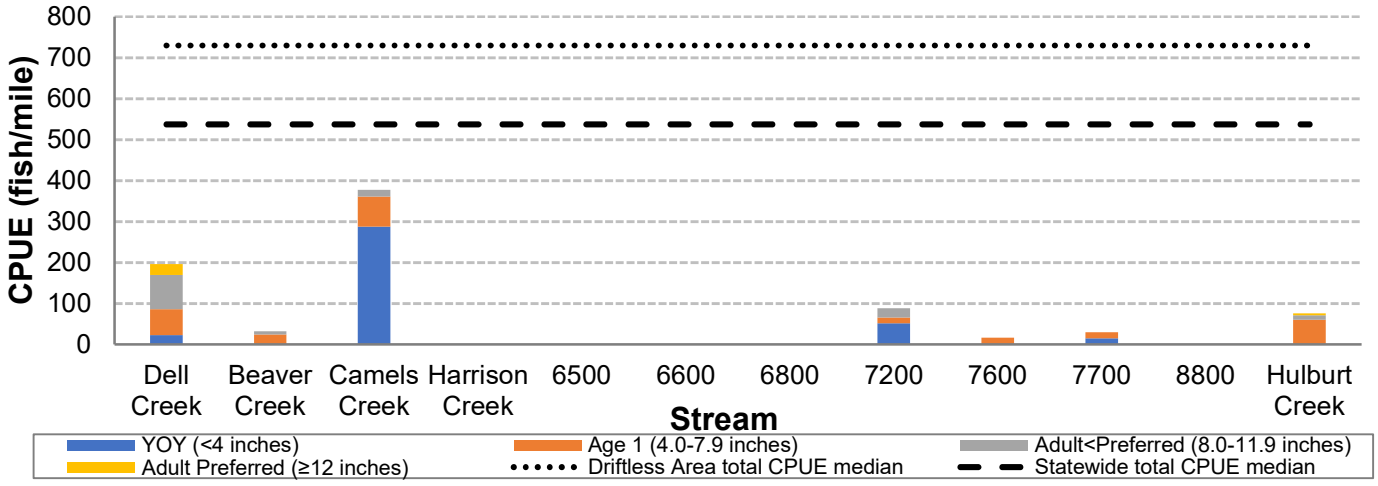

Figure10. Mean total Brown Trout catch-per-unit effort (CPUE) by stream in the Dell Creek-Hulburt Creek stream management group in 2021. Unnamed streams are listed by the last 4 digits of the WBIC.

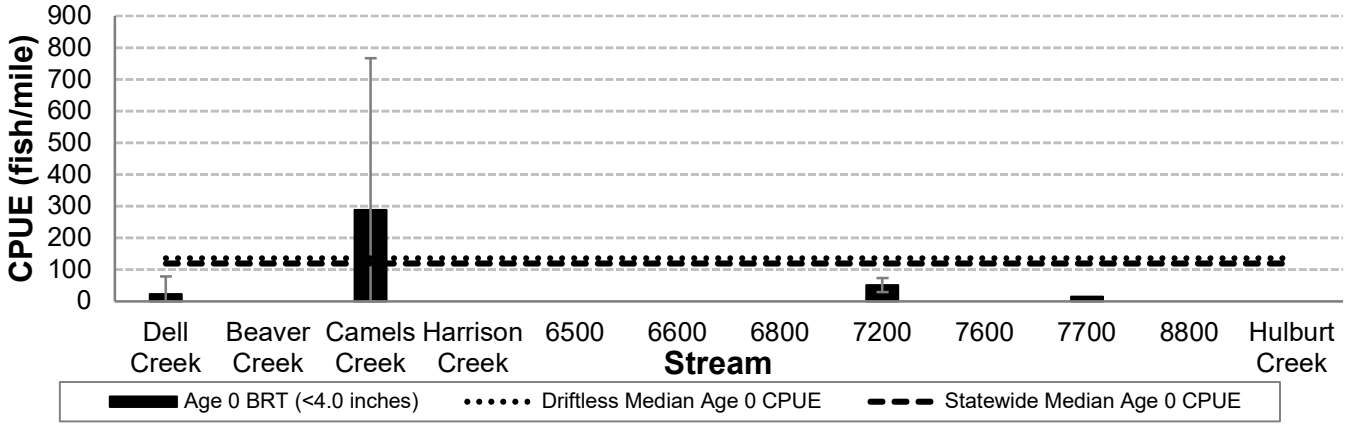

Figure 11. Mean age 0 Brown Trout catch-per-unit effort (CPUE) by stream in the Dell Creek-Hulburt Creek stream management group in 2021. Error bars represent the range of CPUE values observed for each stream or stream segment.

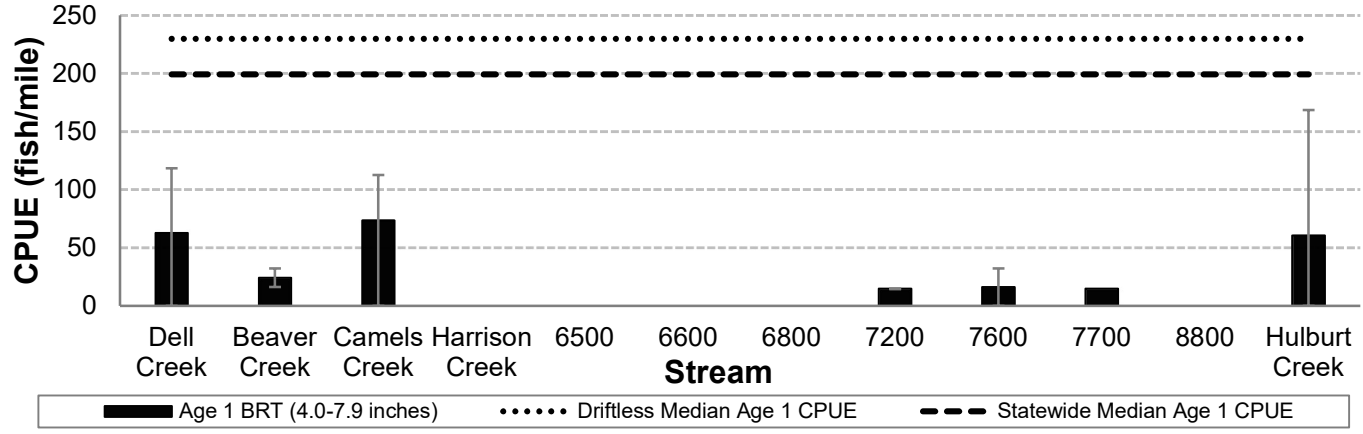

Figure 12. Mean age 1 Brown Trout catch-per-unit effort (CPUE) by stream in the Dell Creek-Hulburt Creek stream management group in 2021. Error bars represent the range of CPUE values observed for each stream or stream segment.

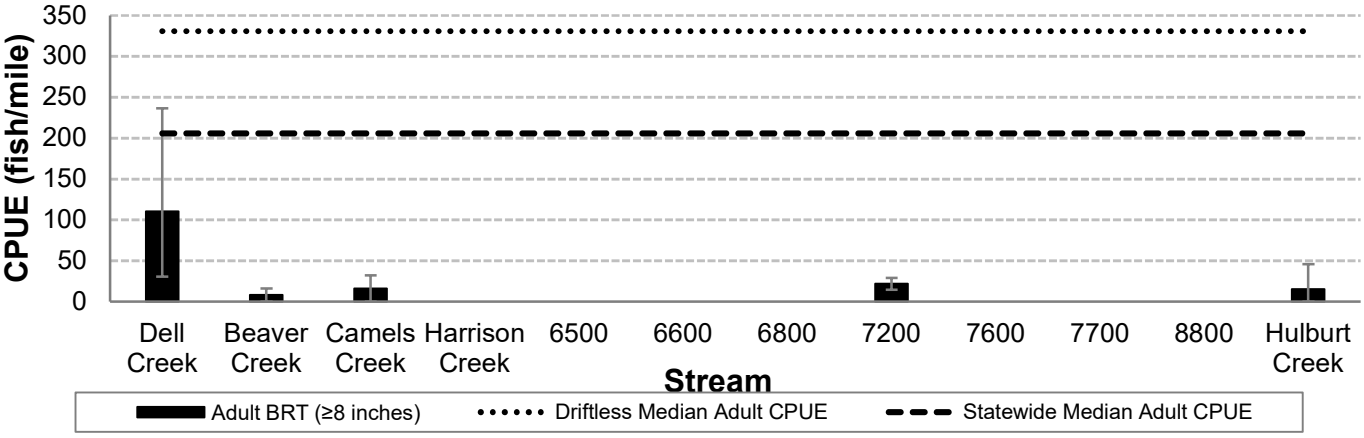

Figure 13. Mean adult Brown Trout catch-per-unit effort (CPUE) by stream in the Dell Creek-Hulburt Creek stream management group in 2021. Error bars represent the range of CPUE values observed for each stream or stream segment.

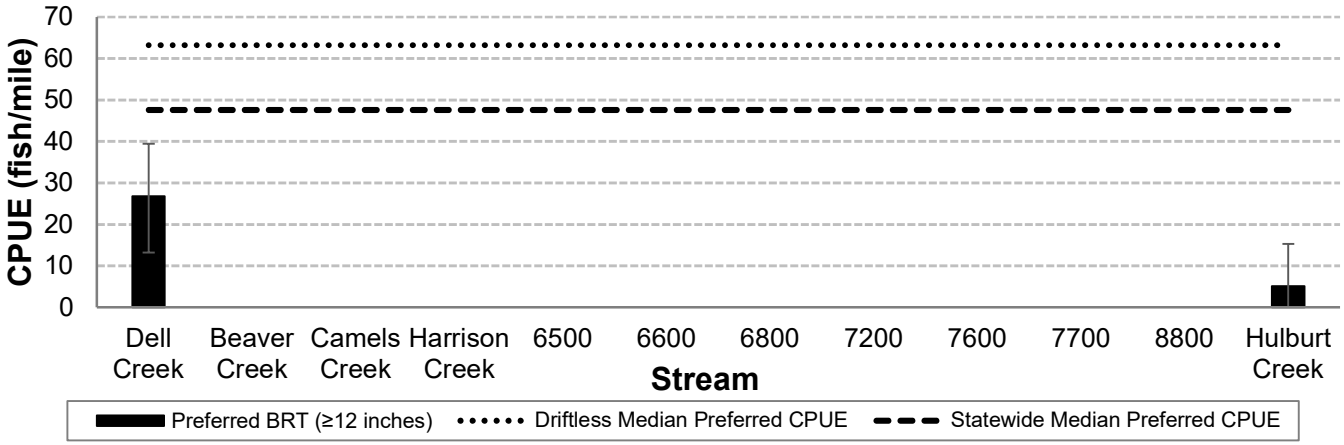

Figure 14. Mean preferred-length Brown Trout catch-per-unit effort (CPUE) by stream in the Dell Creek-Hulburt Creek stream management group in 2021. Error bars represent the range of CPUE values observed for each stream or stream segment.