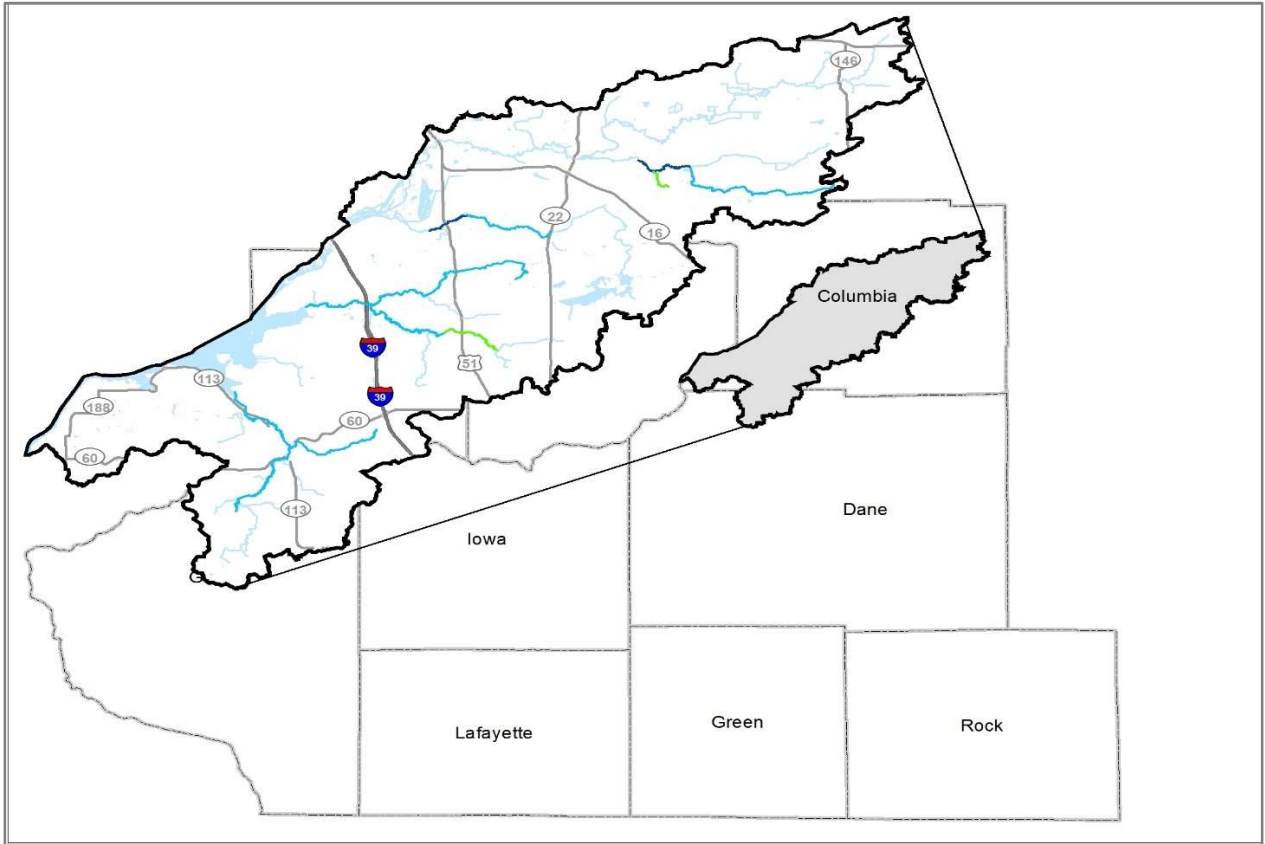


Trout management and status of central Columbia County, Wisconsin trout streams 2019



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EXECUTIVE SUMMARY

Stream electrofishing surveys occurred at 30 locations on 9 streams in central Columbia County in 2019. No fingerling trout were stocked in the system in 2018, and 2019 fingerling stocking was delayed until September to allow for assessment of natural reproduction (age 0; young-of-year) and natural recruitment to age 1 (yearling) in 2019.

At the time of the 2019 surveys, four miles of upper Rowan Creek and the entire length of South Branch Duck Creek were Class 1 trout water. Jennings Creek, 6 miles of middle Rocky Run Creek, the lower 8 miles of Rowan Creek, Hinkson Creek, Spring Creek, and Bohlman Branch were Class 2 trout water. Two miles of lower Rocky Run and 2.5 miles of Middle Branch Duck Creek were Class 3 trout water. An unnamed tributary to Rowan Creek (WBIC 1264100) was unclassified. Prior to being discontinued for this evaluation, Middle Branch Duck Creek, Jennings Creek, Rocky Run, lower Rowan Creek, and Spring Creek had annual small fingerling Brown Trout stocking quotas. Hinkson Creek had an annual large fingerling Brook Trout stocking quota. Rocky Run, Rowan Creek, and Spring Creek had annual surplus broodstock Brown Trout quotas, and those stockings continued during the evaluation and stocked fish were marked with an adipose fin clip. Middle Branch Duck Creek, Jennings Creek, Rocky Run, Rowan Creek and Spring Creek all had annual yearling Rainbow Trout stocking quotas and those stockings continued during the evaluation.

Brown Trout was the predominant trout species in Middle Branch Duck Creek, Jennings Creek, South Branch Duck Creek, Rocky Run, Rowan Creek, Spring Creek, and Bohlman Branch. Brown Trout were found in Hinkson Creek and the unnamed tributary to Rowan Creek as the secondary trout species. South Branch Duck Creek had the highest mean Brown Trout catch rate including the highest age 0 catch rate, but only included one sampling location. Rowan Creek (9 sampling sites) had the second highest overall abundance including the highest mean catch rates of yearling, adult, and preferred-length Brown Trout. Bohlman Branch had the third highest mean Brown Trout catch rate (2 sampling sites), including the second highest mean catch rates of yearling, adult, and preferred-length Brown Trout. Hinkson Creek showed a trend of increasing Brown Trout abundance with a coinciding decrease in Brook Trout abundance at one location which is sampled annually. Spring Creek and Rocky Run showed marked declines in Brown Trout abundance over time due to a likely combination of environmental factors, reduced stocking levels, and lower natural reproduction and recruitment compared to the better-performing streams in the group.

Brook Trout was the predominant trout species in Hinkson Creek and the unnamed tributary to Rowan Creek. Brook Trout were also found in low numbers in Jennings Creek, South Branch Duck Creek, Rowan Creek, and Bohlman Branch. Brook Trout natural reproduction and recruitment are high in Hinkson Creek, although naturally reproducing Brown Trout are becoming more abundant in the middle section of the stream, possibly at the expense of Brook Trout.

Management Recommendations:

- Retain current trout fishing regulations on all streams in the management group.
- Reclassify the Class 3 section of Middle Branch Duck Creek as Class 2.
- Discontinue all trout stocking in South Branch Duck Creek.
- Stock large fingerling Brown Trout in Middle Branch Duck Creek and Rocky Run instead of small fingerlings.
- Stock large fingerling Brook Trout in Jennings Creek and discontinue stocking of Brown Trout.
- Discontinue Rainbow Trout stocking in Jennings Creek.
- Conduct “trout potential” surveys on the unclassified upper segment of Rowan Creek, and an unnamed tributary to Rowan Creek in the Town of Arlington (WBIC 1264300) to determine trout population status and reclassify as appropriate.
- Reclassify an unnamed tributary to Rowan Creek in the Town of Dekorra (WBIC 1264100) from unclassified to Class 1.
- Stock large fingerling Brown Trout in the Class 2 section of Rowan Creek (lower Rowan Creek) instead of small fingerlings.
- Reclassify Hinkson Creek from Class 2 to Class 1.
- Conduct “trout potential” surveys on the unnamed tributary to Hinkson Creek in the Town of Dekorra (WBIC 1264000; locally South Branch Hinkson Creek) to determine trout population status and classify as appropriate.
- Discontinue fingerling Brook Trout stocking in Hinkson Creek with the exception that fingerling trout may be stocked as part of a project to displace domestic-strain Brook Trout by stocking native-strain fish.
- Stock large fingerling Brown Trout in Spring Creek instead of small fingerlings.
- Reclassify Bohlman Branch from Class 2 to Class 1.
- Install appropriate data logging equipment to track temperature and dissolved oxygen in upper Spring Creek in the Lodi Marsh.

INTRODUCTION AND CURRENT STATUS

The central Columbia County trout stream management and planning group is composed of seven named streams and two unnamed tributary streams across two HUC-10 watersheds. Trout streams in the Duck Creek-Wisconsin River HUC-10 watershed (LW20) include Rocky Run, along with Middle Branch Duck Creek and two of its tributary streams; South Branch Duck Creek (locally known as Roelke Creek) and Jennings Creek. Middle Branch Duck Creek and North Branch Duck Creek each flow into Lake Wyona (Wyocena Millpond) and downstream of Lake Wyona it is simply known as Duck Creek and joins the Wisconsin River just west of Lake Columbia after passing just north of the Portage Generating Station operated by Alliant Energy. Rocky Run joins the Wisconsin River approximately 1.8 river miles downstream of the mouth of Duck Creek after flowing through Davies Slough. The Duck Creek-Wisconsin River watershed drains an area of 147.5 square miles which in the year 2000 was dominated by agriculture (46.1%), followed by wetland (17.8%), forest (17.4%), grassland (15.5%), open water (2.0%), development (0.6%), and barren (0.5%) (Table 1, Ripp et al. 2002). Currently, Duck Creek is listed as impaired due to total phosphorous, primarily due to contributions from the North Branch (Wisconsin River TMDL 2019; <https://dnr.wi.gov/topic/tmdls/wisconsinriver/>). None of the other streams in the management group are listed as impaired.

Trout streams in the Lake Wisconsin-Wisconsin River HUC-10 watershed (LW19) include Rowan Creek which receives one unnamed tributary stream (WBIC 1264100) along with one major tributary, Hinkson Creek, after passing through the Village of Poynette, and Spring Creek and an unnamed tributary (WBIC1262300; locally known and henceforth referred to as Bohlman Branch). Rowan Creek flows into a bay of Lake Wisconsin known as Whalen's Grade approximately 6 miles west of the Village of Poynette. Spring Creek enters Lake Wisconsin at Okee Bay approximately 3 miles northwest of the City of Lodi. The Lake Wisconsin-Wisconsin River watershed drains an area of 199.5 square miles which in the year 2000 was dominated by agriculture (45.9%), followed by forest (26.6%), grassland (14.3%), open water (6.6%), wetland (4.8%), other (1.1%), and development (0.7%) (Table 2, Ripp et al. 2002).

Middle Branch Duck Creek is 15.4 miles in length and is a warmwater stream from its headwaters in the Town of Courtland downstream to its confluence with Jennings Creek, just upstream from County Highway SS in the Town of Springvale. From there it is Class 3 trout water for 2.5 miles downstream to County Highway G before flowing on through Figors Mill Flowage and then to Lake Wyona. Jennings Creek is Class 2 trout water from its headwaters in the Town of Courtland downstream 9.1 miles to Willow Mill Pond in the Town of Springvale. Jennings Creek joins Middle Branch Duck Creek just below the outlet of the pond. South Branch Duck Creek is Class 1 trout water from its headwaters in the Town of Springvale downstream 1.5 miles to its confluence with Middle Branch Duck Creek downstream of Schliesmann Road. The dominant trout species in Middle Branch Duck Creek and its tributaries is Brown Trout, however small populations of naturally reproducing Brook Trout are found in both Jennings Creek and South Branch Duck Creek.

Duck Creek, including Middle Branch and South Branch, has been managed for Brown Trout over the years, and was stocked annually with small fingerling Brown Trout prior to this evaluation. Yearling Rainbow Trout were also regularly stocked in Duck Creek since 2001. Jennings Creek was stocked with fingerling or yearling Brook Trout in 7 of 17 years from 1972 through 1988 but has been managed for Brown Trout in recent years with annual stockings of small fingerlings. Yearling Rainbow Trout have also been regularly stocked in Jennings Creek since 2007. Fingerling Brown Trout stocking did not occur in any of the Duck Creek system streams in 2018, and the 2019 stocking was suspended until September to allow for a thorough evaluation of natural reproduction and recruitment in the watershed in summer 2019. Rainbow Trout stocking occurred as normal in 2018 and 2019.

Access to Middle Branch Duck Creek and South Branch Duck Creek is provided through Roelke Creek Fishery Area, a 40-acre WDNR property located near the intersection of Schliesmann and Waters roads approximately 3 miles east of the Village of Wyocena. The property includes the confluence of the two streams. No improvements to fish habitat or infrastructure have been added to the property, but users are able to park along the

shoulder of Schliesmann Road. Beaver management has not been an issue at Roelke Creek Fishery Area. Access to Jennings Creek is provided through Jennings Creek Wildlife Area, a 530-acre WDNR property located approximately 3 miles northeast of the Village of Rio. No improvements to in-stream fish habitat have occurred at Jennings Creek Wildlife Area, and beaver activity in the stream and beaver management are ongoing issues that WDNR managers deal with. Hunting, trapping, and numerous other outdoor activities are available for users of both properties, but motorized travel and camping are not allowed.

Rocky Run is 19.5 miles in length and begins as a warm water stream flowing out of Mud Lake, an open water marsh in the Town of Lowville (Poff and Threinen 1965). From there it flows north by northwest through an unnamed lake (WBIC 1265700) near Rio before turning southwest. After crossing State Highway 22, Rocky Run receives significant groundwater input and is Class 2 trout water for 6 miles and Class 3 water for an additional 2 miles before becoming unclassified again shortly before entering Davies Slough and then the Wisconsin River. Rocky Run has been managed for Brown Trout since the early 1970s and was regularly stocked with small fingerling Brown Trout in the years leading up to this evaluation. Surplus adult broodstock Brook Trout and Brown Trout were also stocked in recent years. Yearling Rainbow Trout were stocked sporadically from the 1970s to the early 2000s, and annually since 2007. Fingerling Brown Trout stocking did not occur in Rocky Run in 2018, and the 2019 stocking was suspended until September to allow for a thorough evaluation of natural reproduction and recruitment in the watershed in 2019. Surplus adult broodstock (Brook and Brown Trout) and yearling Rainbow Trout stocking occurred as normal in 2018 and 2019.

Public access to Rocky Run is provided through Rocky Run Creek Fishery Area, a 737-acre property situated along the creek between State Highway 22 and State Highway 51. The property includes the 301-acre Rocky Run Oak Savanna Natural Area, with an additional 164-acre standalone portion of the Natural Area located adjacent to the Fishery Area. While one access point to the property on Dunning Road offers easy access to the stream, much of the stream access on the property requires substantial foot travel. Little

in-stream fish habitat improvement has occurred over the years at Rocky Run and projects have been limited to structures that could be installed by hand. The remote nature of much of the stream on the property, the presence of wetlands, and the presence of sensitive species are all factors that have prevented intensive fish habitat work with heavy equipment in the past. Beaver management issues have been fairly limited on the property in past years. Rocky Run Creek Fishery Area offers hunting, trapping, and numerous other outdoor activities in addition to fishing, but motorized travel and camping are not allowed on the property.

Rowan Creek is 16.7 miles in length, originating in the Town of Arlington, first flowing northwest and then straight west to its mouth at Lake Wisconsin. Rowan Creek is Class 1 trout water for 4 miles beginning at its confluence with an unnamed tributary (WBIC 1264300) in the Town of Arlington and continuing downstream to a point approximately 0.1 mile downstream of the Poynette Sewage Treatment Plant outfall. From there, Rowan Creek is Class 2 trout water for 8 miles downstream to Lake Wisconsin, collecting another unnamed tributary (WBIC 1264100) along the way. While Brook Trout were stocked once in Rowan Creek as fingerlings in 1972, the stream has been managed for Brown Trout since that time with small fingerlings stocked annually in the years leading up to this evaluation. Surplus adult broodstock Brown Trout were stocked periodically from 1992-2012 and annually since 2016. Yearling Rainbow Trout were stocked occasionally from 1972-2003 and annually since 2007. Fingerling Brown Trout stocking did not occur in Rowan Creek in 2018, and the 2019 stocking was suspended until September to allow for a thorough evaluation of natural reproduction and recruitment in the watershed in 2019.

Access to Rowan Creek is offered through Rowan Creek Fishery Area, a 651-acre WDNR property (644 acres fee title, 7 acres of easements) spread along the stream corridor from approximately 1 mile east of the Village of Poynette to 3.5 miles west of the Village. Additional access is offered through Jameson Park, a 45-acre public park owned and managed by the Village of Poynette that is adjacent to the Fishery Area on the western edge of town. The WDNR owns an easement on the segment of Rowan Creek

that crosses the northern part of Jameson Park. Numerous in-stream fish habitat improvement projects have occurred on Rowan Creek Fishery Area, with some improvements dating to the late 1970s-early 1980s, and other projects occurring more recently in 2011, 2014, and 2016. The Fishery Area offers hunting (with restrictions inside the village limits), trapping, and numerous other outdoor activities in addition to fishing, but does not allow motorized travel or camping on the property. A 1.75-mile lightly developed trail exists on the property, offering excellent wildlife viewing opportunities. Beaver management in the stream corridor is an ongoing issue for WDNR property managers, particularly in the Class 1 section. A snowmobile trail operated by a local snowmobile club also crosses part of the Fishery Area on the east side of Poynette.

Hinkson Creek is 10 miles in length, originating from a marsh complex in the Town of Lowville and flowing west-southwest, collecting one perennial tributary (WBIC 1264000; locally known as South Branch Hinkson Creek) before joining Rowan Creek just upstream of County Highway J in the Town of Dekorra. Hinkson Creek is Class 2 trout water for its entire length. Hinkson Creek is managed for Brook Trout, although the fishery is an even mix of Brook and Brown Trout in its lower reaches. Fingerling Brook Trout were stocked nearly every year from 1979-2017. Brown Trout were stocked twice as fingerlings, in 1997 and 2001. Fingerling Brook Trout stocking was discontinued after 2017 to allow for a thorough evaluation of natural reproduction and recruitment in the watershed in 2019, and to avoid potentially stocking a domestic strain of Brook Trout into a population that earlier genetic testing suggested was more closely grouped with populations with native genetics (but likely of mixed native and domestic origins). The native Brook Trout are a genetic strain that was originally native to Wisconsin and evolved here in the wild for hundreds to thousands of years. The domestic Brook Trout are descendants of a domestic strain brought to Wisconsin from the eastern United States several decades ago and stocked throughout much of the state.

Access to Hinkson Creek is offered through Hinkson Creek Fishery Area, a 233-acre WDNR property consisting of a 73-acre eastern parcel along McMillan Road and a 160-acre western parcel off Kent Road. The Fishery Area is located approximately 2 miles

northwest of the Village of Poynette and offers hunting, trapping, and numerous other outdoor activities in addition to fishing, but does not allow motorized travel or camping on the property. In-stream trout habitat improvement projects have not occurred on the property, but trout stamp-funded tree and brush removal did occur on the Fishery Area upstream of McMillan Road in late 2014. Beaver management is rarely an issue on the Fishery Area. A portion of a snowmobile trail operated by a local snowmobile club also crosses the property.

Spring Creek is 11.9 miles in length, originating from a massive spring complex in the Lodi Marsh in the Town of Dane, Dane County, and is locally known as Lodi Spring Creek. From its origin, Spring Creek flows northeast where it joins with Bohlman Branch in downtown Lodi, and then flows northwest until it enters Lake Wisconsin at Okee Bay. Spring Creek is Class 2 trout water for its entire length and is managed for Brown Trout with fingerlings having been stocked nearly every year since 1972. More recently, surplus adult broodstock Brown Trout stocking occurred in 2011, 2012, and annually since 2016. Stocking of surplus adult broodstock Brook Trout occurred in 2017. Fingerling Rainbow Trout have been stocked since 2016 as part of a Trout in the Classroom project at a local elementary school. Yearling Rainbow Trout stocking occurred from 1974-1981, 2001-2004, and annually since 2007. Fingerling Brown Trout stocking was discontinued in Spring Creek in 2018, and the 2019 stocking was suspended until September to allow for a thorough evaluation of natural reproduction and recruitment in the watershed in 2019. Stocking of yearling Rainbow Trout and adult Brown Trout occurred as normal in 2018 and 2019.

Bohlman Branch (officially unnamed, also known as East Branch Spring Creek) is 4.7 miles in length, originating in the Town of Arlington and flowing west to join Spring Creek in downtown Lodi. The stream has little flow until it passes through an area of significant groundwater input downstream of Hillestad Road. Brown Trout are the dominant species, but Brook Trout are also present. The only stocking in Bohlman Branch has been surplus adult broodstock Brook Trout which were stocked from 2012 through 2019 except for 2017.

Access to Spring Creek is offered through Lodi Spring Creek Fishery Area, a 59-acre property (53 acres fee title, 6 acres of easements) consisting of multiple parcels interspersed through the City of Lodi and to the northwest (downstream) of the city. A 21-acre parcel of the Fishery Area along State Highway 60 on the eastern edge of Lodi provides access to Bohlman Branch. Accessing the stream is also possible through several city parks in Lodi. Several in-stream trout habitat improvement projects have occurred, namely on Bohlman Branch as well as Spring Creek through the pasture downstream of County Highway J. A tree and brush removal project to improve access and fishability was completed on the Fishery Area at the lower State Highway 113 access in 2014. Beaver management has not been an issue at Spring Creek Fishery Area. Portions of the Fishery Area allow hunting, trapping, and numerous other outdoor activities in addition to fishing, but camping and motorized travel are not allowed on the property. Access to much of upper Spring Creek exists via Lodi Marsh Wildlife Area and Lodi Marsh State Natural Area located southwest (upstream) of the City of Lodi.

Locations where trout sampling occurred in 2019 are found on the map in Figure 1. The current trout fishing regulation for all streams in the central Columbia County stream management group is an 8-inch minimum length limit with a 3 fish daily bag limit and no bait restrictions. The single exception is Spring Creek from County Highway J downstream to the mouth at Lake Wisconsin which has a 12-inch minimum length limit with a 2 fish daily bag limit and only artificial baits or lures are allowed (Figure 2). Public access for fishing along central Columbia County trout streams can be found on the map in Figure 3. Current stocking quotas for central Columbia County trout streams are listed in Table 3.

METHODS

Stream sampling

Summer stream sampling on both trend (sampled every year) and rotation (sampled on a 3-year or 6-year rotation) sites in 2019 spanned from June 17 through August 20 and the sampling locations, site metrics, and gear used are described in Tables 4 and 5 as well as Figure 1. Timing of sampling attempted to match dates of surveys in previous years as

closely as possible. All 30 stream sites were surveyed with either a tow-behind barge stream electrofishing unit or backpack electrofishing unit. The backpack electrofishing units consisted of a backpack-mounted control box in which the operator controlled the anode with one hand and dipped fish with the other, while a steel cable cathode trailed behind the operation and completed the electrical field. These were used on small streams that were typically shallow in nature. Tow-behind stream electrofishers were larger units in which the generator was mounted in a barge that was towed by one individual. Two individuals then introduced electricity into the stream via anode probes connected to the output box and capture stunned fish with dip nets before transferring them to a holding tank in the barge until processing time. The cathode consisted of a steel rack mounted to the hull of the barge. These units were used in larger wadable streams.

The number of sites varied depending on the stream segment length. One site was sampled on segments less than 1.5 miles, two sites on segments from 1.5-3 miles, and one site per three miles on segments greater than three miles. The length of stream sampled at each location was determined by stream width, with site length being 35 times the mean stream width on segments greater than 3 meters. On streams less than 3 meters wide, a minimum of 100 meters was sampled. 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. Other specifics can be found in the Wisconsin DNR Fisheries Management Handbook, chapter 510 (Simonson 2015).

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 central Columbia County stream sites sampled in 2019 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.

In order 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 central Columbia County management group

in 2018, and 2019 fingerling stocking was delayed until after all stream surveys had been completed. The age 0 trout catch rates in 2019 were thus indices of natural reproduction while the age 1 catch rates in 2019 served as indices of natural recruitment to the fisheries of the respective streams. For streams with regular fingerling stocking quotas, adult fish sampled in 2019 were fish ≥ 2 years of age that were the product of either natural reproduction or stocking that occurred in 2017 or earlier.

Once fish sampling was complete, 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 Brown Trout ≥ 12 inches and Brook Trout ≥ 10 inches.

Throughout the remainder of the report, results, conclusions, and recommendations for Rowan Creek are framed around the upper and lower reaches of the stream. Upper Rowan Creek included the Class 1 section as well as the unclassified section upstream of the Class 1 section (sites 48, 49, 51, 52, 55, 73, and 77). Lower Rowan Creek encompassed the Class 2 segment (sites 63 and 72). The habitat in the two sections of Rowan Creek varies greatly, with the upper section having higher gradient, frequent riffles, and common rock and gravel substrate. Lower Rowan Creek has a lower gradient, lacks riffles, and sand is the predominant substrate with occasional clay and no rock or gravel. Water temperature varies little between the sections, but the lack of rock and gravel substrate limits natural reproduction in lower Rowan Creek necessitating stocking to maintain the fishery and leading to the different classification of the two segments.

Percentile values for size-specific trout catch rates referenced in the narrative, tables, and figures in this paper were generated from summaries of WDNR fishery surveys of Class 1 trout streams in the Southeastern Till Plains Ecoregion of Wisconsin 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 Southeastern Till Plains are shown in Figure 4. Please refer to Tables 6 and 7 for reference values for the 10th, 25th, 35th, 50th, 65th, 75th, and 90th percentiles for catch rates for various size classes of Brown Trout and Brook Trout from surveys of Class 1 streams in the Southeastern Till Plains Ecoregion and statewide. Catch rate values that fall below the 35th percentile indicate low trout abundance, between the 35th and 65th percentiles indicate medium abundance, and values above the 65th percentile indicate high abundance.

RESULTS

In total, 30 stream sites were sampled within the central Columbia County stream group in 2019. Data were compiled based on both individual stream sites and grouped based on whole streams or stream segments for regional and statewide comparisons; catch rates were averaged for whole streams or stream segments with multiple sampling locations.

Brown Trout

Brown Trout were collected at 28 of 30 sampling locations in the management group in 2019 except for the upstream-most Hinkson Creek location (site 50, 100% Brook Trout) and the downstream-most Rocky Run location (site 70, no trout collected; Figure 5).

Please refer to Table 8 for Brown Trout catch rates for all size classes from all sampling locations as well as averages for each stream or groups of sites within a stream.

Catch rates

South Branch Duck Creek had the highest mean total Brown Trout catch rate of all streams in the group at 1,740 fish/mile, although this was from only a single sampling location. Rowan Creek had the next highest mean catch rate at 1,103.9 fish/mile for all sites (range 193.2-2,213.4 fish/mile). However, differences were evident for the different

reaches of Rowan Creek with upper Rowan Creek having a much higher mean total catch rate than lower Rowan Creek (1,295.6 fish/mile vs. 433.1 fish/mile), and the catch rate difference reflects the habitat and stream classification differences outlined previously. Bohlman Branch had the next highest mean total catch rate (695.6 fish/mile; range 459.9-931.4 fish/mile) followed by Spring Creek (234.7 fish/mile; range 27.6-407.4 fish/mile), Hinkson Creek (219.2 fish/mile; range 0.0-585.4 fish/mile), Jennings Creek (178.2 fish/mile; range 69.0-287.5 fish/mile), the unnamed tributary to Rowan Creek (128.8 fish/mile), Middle Branch Duck Creek (109.0 fish/mile; range 16.1-220.8 fish/mile), and Rocky Run (77.0 fish/mile; range 0.0-253.0 fish/mile). Catch rates for each individual sampling location are presented in Figure 5 while mean catch rates by stream or stream segment are presented in Figure 6.

Age 0 Brown Trout (young-of-year; <4.0 inches) were most abundant in South Branch Duck Creek where the mean catch rate was 1,373.0 fish/mile, followed by upper Rowan Creek (355.8 fish/mile), Bohlman Branch (110.4 fish/mile), Jennings Creek (92.0 fish/mile), lower Rowan Creek (69.0 fish/mile), Hinkson Creek (63.4 fish/mile), Middle Branch Duck Creek (34.9 fish/mile), Spring Creek (33.1 fish/mile), and Rocky Run (24.9 fish/mile). No age 0 Brown Trout were collected from the unnamed tributary to Rowan Creek. Age 0 Brown Trout catch rates are presented in Figure 7.

Age 1 Brown Trout (yearling; 4.0-7.9 inches) were most abundant in Upper Rowan Creek where the mean catch rate was 268.0 fish/mile followed by Bohlman Branch (162.1 fish/mile), South Branch Duck Creek (142.0 fish/mile), lower Rowan Creek (126.5 fish/mile), Spring Creek (101.3 fish/mile), Hinkson Creek (84.6 fish/mile), the unnamed tributary to Rowan Creek (48.3 fish/mile), Middle Branch Duck Creek (42.7 fish/mile), Rocky Run (23.4 fish/mile), and Jennings Creek (23.0 fish/mile). Age 1 Brown Trout catch rates are presented in Figure 8.

Adult Brown Trout (≥ 8 inches) were most abundant in Upper Rowan Creek where the mean catch rate was 671.6 fish/mile followed by Bohlman Branch (423.1 fish/mile), lower Rowan Creek (237.6 fish/mile), South Branch Duck Creek (224.9 fish/mile),

Spring Creek (100.2 fish/mile), the unnamed tributary to Rowan Creek (80.5 fish/mile), Hinkson Creek (71.2 fish/mile), Jennings Creek (63.2 fish/mile), Middle Branch Duck Creek (29.5 fish/mile), and Rocky Run (28.7 fish/mile). Adult Brown Trout catch rates are presented in Figure 9.

Preferred-length Brown Trout (≥ 12 inches) were most abundant in Upper Rowan Creek where the mean catch rate was 104.9 fish/mile followed by Bohlman Branch (96.6 fish/mile), lower Rowan Creek (84.3 fish/mile), South Branch Duck Creek (71.0 fish/mile), Jennings Creek (40.2 fish/mile), Spring Creek (34.3 fish/mile), Hinkson Creek (16.1 fish/mile), Rocky Run (9.6 fish/mile), and Middle Branch Duck Creek (6.1 fish/mile). No preferred-length Brown Trout were collected from the unnamed tributary to Rowan Creek. Preferred-length Brown Trout catch rates are presented in Figure 10.

Brook Trout

Brook Trout were collected at 11 of 30 sampling locations in the management group in 2019 including 2 of 9 locations on Rowan Creek, the single location on the unnamed tributary to Rowan Creek, 3 of 3 locations on Hinkson Creek, 2 of 2 locations on Bohlman Branch, 2 of 2 locations on Jennings Creek, and the single location on South Branch Duck Creek. No Brook Trout were collected from Spring Creek, Middle Branch Duck Creek, or Rocky Run. Please refer to Table 9 for Brook Trout catch rates for all size classes from all sampling locations as well as averages for each stream or stream segment.

Catch Rates

Hinkson Creek had the highest mean total Brook Trout catch rate of all streams in the group at 516.3 fish/mile (range 13.1-950.5 fish/mile) followed by the unnamed tributary to Rowan Creek (161.0 fish/mile), Jennings Creek (69.0 fish/mile; range 11.5-126.5 fish/mile), Bohlman Branch (60.9 fish/mile; range 11.5-110.4 fish/mile), South Branch Duck Creek (11.8 fish/mile), and upper Rowan Creek (2.7 fish/mile; range 0.0-11.5 fish/mile). Brook Trout catch rates for each individual sampling location are presented in Figure 11 while mean catch rates by stream or stream segment are presented in Figure 12.

Age 0 Brook Trout (young-of-year; <4.0 inches) were most abundant in Hinkson Creek where the mean catch rate was 334.4 fish/mile, followed by the unnamed tributary to Rowan Creek (80.5 fish/mile), Bohlman Branch (42.5 fish/mile), Jennings Creek (40.2 fish/mile), South Branch Duck Creek (11.8 fish/mile), and upper Rowan Creek (1.0 fish/mile). Age 0 Brook Trout catch rates are presented in Figure 13. Age 1 Brook Trout (yearling; 4.0-6.9 inches) were most abundant in Hinkson Creek where the mean catch rate was 116.1 fish/mile followed by the unnamed tributary to Rowan Creek (16.1 fish/mile), and Jennings Creek (11.5 fish/mile). Age 1 Brook Trout catch rates are presented in Figure 14. Adult Brook Trout (≥ 7 inches) were most abundant in Hinkson Creek where the mean catch rate was 65.8 fish/mile followed by the unnamed tributary to Rowan Creek (64.4 fish/mile), Bohlman Branch (18.4 fish/mile), Jennings Creek (17.2 fish/mile), and upper Rowan Creek (1.6 fish/mile). Adult Brook Trout catch rates are presented in Figure 15. Preferred-length Brook Trout were found only in Bohlman Branch (9.2 fish/mile; Figure 16).

Rainbow Trout

Rainbow Trout are stocked as keeper-size yearlings to provide an additional harvest opportunity for anglers in heavily fished Class 2 waters (Rowan Creek, Spring Creek) and marginal Class 2 and 3 waters with good public access but relatively low Brown Trout abundance (Jennings Creek, Middle Branch Duck Creek, Rocky Run). Rainbow Trout are also stocked as small fingerlings in Spring Creek as part of a Trout in the Classroom project at a local elementary school. Rainbow Trout were collected at 14 of 30 sampling locations in the management group in 2019 including 5 of 9 locations on Rowan Creek, 3 of 4 locations on Spring Creek, 2 of 2 locations on Jennings Creek, 2 of 4 locations on Middle Branch Duck Creek, and the single location on South Branch Duck Creek. No Rainbow Trout were collected from the unnamed tributary to Rowan Creek, Hinkson Creek, or Bohlman Branch. Mean Rainbow Trout catch rates were 40.2 fish/mile in Jennings Creek, 35.5 fish/mile in South Branch Duck Creek, 33.4 fish/mile in Rowan Creek, 17.1 fish/mile in Spring Creek, 15.3 fish/mile in Rocky Run, and 3.8

fish/mile in Middle Branch Duck Creek. Please refer to Figure 17 for the range of Rainbow Trout catch rates of fish ≥ 8 inches for each stream.

Trout CPUE trend monitoring

Trout populations are monitored annually at two locations on Rowan Creek and one location each on Hinkson Creek and Spring Creek. Rowan Creek trend monitoring locations include one site on upper Rowan Creek (site 73; 2007-2019) and one site on lower Rowan Creek (site 72; 2009-2019). The Hinkson Creek trend monitoring location is site 58 (2016-2019) and the Spring Creek location is site 61 (2016-2019). The Hinkson Creek and Spring Creek trend monitoring sites were previously sampled on a rotational basis; every 6 years for Hinkson Creek and every 3 years for Spring Creek. Data from rotational sampling are presented along with trend data for Hinkson Creek and Spring Creek trend sites. Catch rate data from trend monitoring sites are presented in Figures 18 through 22. Each figure includes the total catch rate and catch rate of fish \geq age 1, total adult catch rate, and catch rate of preferred-length fish, and these catch rates are denoted by the solid black line at the top of each shaded region. The shaded regions represent the difference between the total catch rate for one age class and the catch rate of the next older age class. In other words, the blue shaded region represents the age 0 catch rate, the orange shaded region represents the age 1 catch rate, the light gray region represents the catch rate of adult fish smaller than the preferred length, and the yellow region represents the catch rate of preferred-length fish.

Brown Trout catch rates for upper Rowan Creek site 73 were variable from year to year, and cyclical through time as seen in Figure 18. Over the past 13 years, total CPUE improved gradually from 2007 before peaking in 2011. Catch rates then bottomed out in 2014 and have been variable but improving since then. For lower Rowan Creek site 72, total CPUE appeared to follow a similar cycle, improving gradually from 2009 before peaking in 2013, followed by a precipitous decline in 2014. Catch rates slowly declined further before bottoming out in 2017 and then improving steadily in 2018 and 2019 (Figure 19).

Brown Trout catch rates for Hinkson Creek site 58 have increased from 2010 through 2019 (Figure 20). Total Brown Trout CPUE steadily increased from 249 fish/mile in 2010 to 585 fish/mile in 2019, and the increase has primarily been driven by natural reproduction and recruitment, as catch rates of age 0 and age 1 Brown Trout increased steadily throughout the time period in the absence of stocking. Adult CPUE was higher in 2019 than in 2010 but was somewhat variable in between. Preferred-length CPUE remains essentially unchanged from 2010, and this is a function of the size of the stream and available habitat, specifically cover for larger trout. Conversely, Brook Trout catch rates have been variable, but trended downward since total CPUE peaked at 1,565.9 fish/mile in 2016 to 585 fish/mile in 2019 (Figure 21). The 2016 Brook Trout catch was dominated by age 0 fish indicating outstanding natural reproduction that year. It should be noted that age 0 Brook Trout catch rates for Hinkson Creek (<4.0 inches) were reflective of natural reproduction in all years; surveys occurred prior to fingerling stocking in 2010, 2016, and 2017, and no stocking occurred in 2018 or 2019.

Brown Trout catch rates for Spring Creek site 61 dropped precipitously from 2013 to 2016 before improving in 2017, and this is similar to the pattern observed in Rowan Creek over the same period. Catch rates dropped sharply again in 2019, and this likely reflects a negative impact on the trout population from severe flash flooding in Spring Creek on March 13, 2019. Massive amounts of rock and gravel bedload were moved and deposited in other areas of the stream, resulting in largescale habitat alterations. Riffles and runs were altered significantly, and new islands in the stream were formed where riffles and shallow runs once existed. A long gravelly run approximately 100 meters in length at the end of site 61 that served as excellent nursery habitat and once produced most of the age 0 and age 1 catch in the station was completely altered, with in-stream vegetation eliminated and new unconsolidated bed material covering the previous sand and gravel bottom. Depth was also significantly reduced. Catch rate declines from 2018 to 2019 were mostly due to drops in the numbers of age 0 and age 1 fish collected. Trend monitoring catch rates for site 61 are presented in Figure 22.

Additional trout CPUE data supporting reclassifications

Prior to 2019, Hinkson Creek had one trout trend monitoring site (site 58), and one site monitored on a 6-year rotation (site 50). Also, prior to cessation of stocking, large fingerling Brook Trout were stocked annually in mid-September. All trend and rotational trout surveys in Hinkson Creek from 2010-2019 occurred in the absence of Brown Trout stocking (all years), Brook Trout stocking (2018, 2019), or prior to fingerling Brook Trout stocking occurring in stocked years (2010, 2016, 2017). Therefore age 0 catch rates of both species reflected natural reproduction in all years, and age 1 catch rates reflected natural recruitment of Brown Trout in all years. Age 0 Brook Trout catch rates for sites 50 and 58 from surveys in 2010 and 2016 through 2019 are presented in Figure 23.

DISCUSSION

Middle Branch Duck Creek

Middle Branch Duck Creek had the second lowest mean total Brown Trout CPUE in the central Columbia County management group in 2019, ahead of only Rocky Run. On a broader scale, natural reproduction was medium, placing between the 35th and 50th percentiles (median) compared to streams in the Southeastern Till Plains region, and statewide. Natural recruitment as measured by age 1 trout abundance was low, placing below the 25th percentile compared to streams in the Southeastern Till Plains region, and statewide.. Adult trout abundance was also low, again placing below the 25th percentile compared to streams in the Southeastern Till Plains region, and statewide. The mean adult Brown Trout CPUE of 29.7 fish/mile, which is reflective of age 2 and older trout (years when stocking occurred) was well below the minimum fishable population of 50 adult trout per mile. Adult Brown Trout abundance only exceeded 50 fish/mile at 1 of 4 sampling locations on Middle Branch Duck Creek in 2019. Relatively low IBI scores, higher numbers of fish species collected at each sampling location, and warmer water temperatures relative to the best streams in the management group are all indicators that Middle Branch Duck Creek is more marginal in terms of its suitability for trout and its ability to produce high annual natural reproduction and recruitment.

It should be noted that of the 4 sampling locations on Middle Branch Duck Creek, Brown Trout catch rates for all size classes were highest downstream of the confluence with South Branch Duck Creek. This was not surprising because South Branch Duck Creek contributes a significant amount of colder water to Middle Branch and serves as a source of naturally produced Brown Trout that out migrate from South Branch to Middle Branch.

When looking at the stocking records it is apparent that fingerling trout meant for stocking in Middle Branch Duck Creek were instead stocked in South Branch Duck Creek. This has occurred since at least 2005, with the Middle Branch Duck Creek quota split between the Middle and South branches in 2007, 2009, 2013, and 2015, and the entire quota stocked in the South Branch in 2005, 2006, 2008, 2010 through 2012, 2014, 2016, 2017, and 2019. This may help explain why adult Brown Trout abundance is so low in Middle Branch Duck Creek despite having some natural reproduction and recruitment plus an annual fingerling stocking quota.

Because natural reproduction and recruitment of trout are occurring in Middle Branch Duck Creek, and because trout survive there throughout the year, then by definition it is not a Class 3 stream and should be re-classified as a Class 2 stream. Middle Branch Duck Creek has public access via Roelke Creek Fishery Area and at bridge crossings, and a 2018 creel survey found that anglers are utilizing the stream for trout fishing (WDNR unpublished data). The management goal for Middle Branch Duck Creek is to create a viable Brown Trout fishery that offers an adequate harvest opportunity for anglers. The measurable objective is an average adult Brown Trout catch rate greater than 100 fish/mile in the classified section of the stream. The management strategy is to continue stocking of Brown Trout in Middle Branch Duck Creek at state-recommended rates with large fingerlings as the age class of choice. Stocking large fingerlings instead of small fingerlings will give stocked Brown Trout a better chance to escape predation by Creek Chubs, Bullheads, or other piscivorous warm water fishes living in Middle Branch Duck Creek, thus improving survival to age 1 and beyond. Care must be taken to ensure the fingerlings are stocked in the correct stream, and stocking in South Branch Duck Creek

must be discontinued completely. If several years of fingerling stocking ultimately fail to maintain adult Brown Trout catch rates in excess of 50 fish/mile then stocking of fingerling trout in Middle Branch Duck Creek should be reconsidered. The current fishing regulation protects trout to adult sizes while also providing a harvest opportunity, and no regulation change is needed.

South Branch Duck Creek

South Branch Duck Creek had the highest mean total Brown Trout CPUE of any stream in the management group, however this was based on sampling at a single location due to the short length of the stream. Two sampling locations on Rowan Creek had higher total Brown Trout CPUE values. On a broader scale, total trout abundance was high, placing between the 75th and 90th percentiles for the Southeastern Till Plains region and statewide. Natural reproduction in South Branch Duck Creek was very high, placing well above the 90th percentile compared to Southeastern Till Plains streams, and statewide. Natural recruitment as measured by age 1 trout abundance was low to medium, placing between the 25th and 35th percentiles for the Southeastern Till Plains region, but between the 35th and 50th percentiles (median) compared to streams statewide. Adult trout abundance was also medium, placing between the 50th and 65th percentiles when comparing streams in the Southeastern Till Plains region, and statewide. Abundance of preferred-length fish was high, placing at or above the 75th percentile for the Southeastern Till Plains region, and statewide.

Based on its performance in terms of natural reproduction and recruitment of Brown Trout in 2019, South Branch Duck Creek is correctly Classified as Class 1 and a change in classification is not recommended. Despite its Class 1 status, its lack of a stocking quota, and no direction to do so, fingerling Brown Trout were regularly stocked in South Branch Duck Creek from 2005-2019 and those fish should have been stocked into Middle Branch Duck Creek instead. It is recommended that all stocking cease in South Branch Duck Creek moving forward. The current fishing regulation protects trout to adult sizes while also providing a harvest opportunity, and no regulation change is needed. South Branch Duck Creek has low adult Brown Trout abundance relative to the amount of

natural reproduction that occurs there. South Branch Duck Creek is wide and shallow and cover for larger trout is lacking. It is recommended that the stream be evaluated for the feasibility of an intensive trout habitat improvement project on the segment downstream of Schliesmann Road on the Roelke Creek Fishery Area. The goal would be to increase numbers of larger adult trout in the stream by increasing overhead cover. Part of this evaluation will include an electrofishing survey of the creek from the mouth upstream to Schliesmann Road to determine current trout abundance and size structure in the segment.

Jennings Creek

Jennings Creek had the fourth lowest mean total Brown Trout CPUE out of 9 streams in the central Columbia County management group in 2019. On a broader scale, total trout abundance was low, placing below the 25th percentile for the Southeastern Till Plains region and statewide. Abundance of age 0 Brown Trout (age 0 CPUE; natural reproduction) was medium, placing between the 50th and 65th percentiles compared to streams in the Southeastern Till Plains region, and statewide. Natural recruitment as measured by age 1 trout abundance was low, placing below 10th percentile compared to Southeastern Till Plains streams, and below the 25th percentile compared to streams statewide. Adult Brown Trout abundance was low to medium, placing below the 25th percentile compared to streams in the Southeastern Till Plains region, but between the 35th and 50th percentiles when compared statewide. The adult Brown Trout catch rate of 69 fish/mile was above the minimum fishable population standard of 50 adult trout per mile for stocked Wisconsin trout streams. Abundance of preferred-length Brown Trout was also medium, placing between the 50th and 65th percentiles regionally and statewide.

Brook Trout have not been stocked in Jennings Creek since 1988, but a small self-sustaining population was present in 2019. Total Brook Trout abundance was low, placing below the 25th percentile for the Southeastern Till Plains region and statewide. Abundance of age 0 Brook Trout (age 0 CPUE; natural reproduction) was also low, again placing below the 25th percentile regionally and statewide. Natural recruitment as measured by age 1 trout abundance was low, but regional and statewide age 1 Brook

Trout CPUE comparisons were not possible. Adult Brook Trout abundance was also low to medium, placing below the 25th percentile regionally and between the 25th and 35th percentiles statewide.

Natural reproduction and recruitment of Brook and Brown Trout are occurring in Jennings Creek with the total combined Brook and Brown Trout catch rate approaching 250 fish/mile. However, stocking of trout is needed to allow the population to fully utilize the available habitat and sustain the fishery. Jennings Creek is correctly classified as a Class 2 stream, and no change to the classification is recommended. Brown Trout survival from natural reproduction and stocking to adult size meets the minimum fishable population standard of 50 fish/mile (currently 63.2 adult Brown Trout per mile).

However, the characteristics of the stream (lower gradient, colder water, less rock and gravel substrate than some other area trout streams) along with the presence of a small but completely self-sustaining Brook Trout population suggest that perhaps Jennings Creek should be managed for Brook Trout instead of Brown Trout. Moving forward the management goal is to produce a viable Brook Trout fishery that provides harvest opportunities for anglers. The objective is an average adult Brook Trout catch rate ≥ 75 fish/mile, which would place Jennings Creek between the 50th and 65th percentiles compared to Class 1 Brook Trout streams statewide. The management strategy is to stock large fingerling Brook Trout annually at state-recommended rates. The next evaluation in 2025 should indicate whether Brook Trout abundance has begun to increase as a result of stocking efforts (and if Brown Trout abundance is declining), although full evaluation of the success of Brook Trout stocking may not be possible until further in the future.

Rainbow Trout provided an additional harvest opportunity for anglers in the form of 40 adult-sized trout per mile which was the highest of any stream in the group. However, recent trout creel data indicated little use of Rainbow Trout by anglers on Jennings Creek compared to nearby Middle Branch and South Branch Duck Creek (WDNR unreported data). For that reason, it is recommended to discontinue stocking Rainbow Trout in

Jennings Creek. The current trout fishing regulation protects fish to adult size while still providing a harvest opportunity and no regulation change is recommended at this time.

In terms of in-stream habitat, persistent dam construction by beavers inhabiting Jennings Creek upstream of Ludwig Road caused flow to be diverted from the main stream channel to a drainage ditch on adjacent private property, the elevation of which is lower than that of Jennings Creek. Over time, the diversion channel grew deeper and wider until it was diverting all flow from Jennings Creek to the ditch. The main channel of Jennings Creek now carries no flow from the point of the diversion channel downstream to the confluence of the drainage ditch with Jennings Creek just upstream of Ludwig Road, approximately 0.75 mile of stream. It is recommended to assess the feasibility of repairing the stream such that the flow is returned to the main channel. This will benefit the trout population by restoring natural habitat and will benefit the adjacent landowner by lowering the water level in the ditch and facilitating better drainage of his crop fields. Wildlife and Fisheries staff should explore any and all opportunities to purchase the private land adjacent to Jennings Creek Wildlife Area north of Jennings Creek and east of Ludwig Road. These parcels are located within the Natural Resources Board (NRB) approved acquisition boundary for Jennings Creek Wildlife Area. Acquisition of these parcels would give Wildlife and Fisheries managers greater freedom to improve wildlife and fish habitat, both on land and in the stream.

Rocky Run

Rocky Run had the lowest mean total Brown Trout CPUE in the central Columbia County management group in 2019. On a broader scale, total Brown Trout abundance was low, placing below the 10th percentile compared to streams in the Southeastern Till Plains region, and below the 25th percentile when compared statewide. Natural reproduction was medium, placing between the 35th and 50th percentiles when compared regionally and statewide. Natural recruitment as measured by age 1 trout abundance was low, placing below 10th percentile compared to Southeastern Till Plains streams, and below the 25th percentile when compared statewide. Adult trout abundance was also low, again placing below the 25th percentile in regional and statewide comparisons. The mean

adult Brown Trout catch rate of 28.7 fish/mile, which is reflective of age 2 and older trout (from years when stocking occurred) falls well below the minimum fishable population of 50 adult trout per mile. Adult Brown Trout abundance only exceeded 50 fish/mile at 1 of 4 sampling locations on Rocky Run in 2019. Warmer water temperatures relative to the best streams in the management group, higher numbers of fish species collected at each sampling location, and resultant low IBI scores are all indicators that Rocky Run is more marginal compared to other streams in the group in terms of its suitability for trout and its ability to produce high annual natural reproduction and recruitment. Rocky Run begins as a warm water stream for several miles before groundwater inputs begin to cool the stream, and this is a large handicap to overcome.

Despite its thermal impairments, the classified section of Rocky Run does have many other qualities that make it suitable for trout including ample rock and gravel substrate, good natural overhead cover, and relatively limited bank erosion and sedimentation issues compared to several other area trout streams. Rocky Run has shown the ability to produce far higher trout abundances than those observed in 2019, with significant declines noted since 2010. Three sampling locations were visited during rotational survey years (2010, 2016, and 2019) and Brown Trout catch rates from two of those locations (site 68 and 69) are presented in Figures 24 and 25, respectively. Those sites are most representative of the trout population in the Class 2 section of Rocky Run. The third location (site 71; Cuff Road) is at the upper end of Class 2 trout water, is the warmest in terms of stream temperature, and never held more than a few trout in any given year, and so is excluded here.

Site 68 has shown a steady decline in Brown Trout abundance from around 370 fish/mile in 2010 to less than 50 fish/mile in 2019, an 87% reduction (Figure 24). The absence of age 0 and age 1 Brown Trout at site 68 in 2019 indicated that natural reproduction and recruitment do not occur there. This lack of natural trout production coupled with stocking reductions since 2012 (presented in Figure 26) go a long way in explaining the steep, steady decline in trout abundance there. Changes in locations of fingerling trout stocking may also have played a role in reducing abundance at this location.

Site 69 saw an increase in abundance from 2010 to 2016, primarily driven by numbers of age 0 and age 1 fish while adult abundance declined (Figure 25). Reduced adult abundance in 2016 is explained in part by significant reductions in the number of fingerling Brown Trout stocked in 2013 and 2014 compared to 2006-2012 (Figure 26). Numbers of fingerlings stocked increased again after 2014, but never again reached historic stocking levels. The 2013-2014 reductions were due to reduced hatchery production stemming from radon abatement issues at Nevin State Fish Hatchery. The 2013 and 2014 year classes would have formed the bulk of the adult trout population in 2016, and in a stream where natural reproduction and recruitment were low, fingerling stocking reductions were reflected in adult catch rates in subsequent years. Numbers of fingerlings stocked never returned to levels prior to 2013, and from 2016 to 2019 trout abundance declined by 59% at site 69. At this location, natural reproduction and recruitment were able to offset stocking reductions to some degree, but abundance still declined significantly, and it is evident that stocking is key to Rocky Run's success in producing a viable trout fishery. One other critical element is that historically, fingerling stocking was spread out across multiple locations on Rocky Run which has relatively few easy access points. Stocking often involved traveling off-road to stock at remote locations. Fisheries and District Operations staff must work together to ensure stocked fingerlings are distributed across several locations on Rocky Run as opposed to just the two road crossings in the Class 2 section (Cuff Road and Dunning Road).

In summation, Rocky Run is a marginal Class 2 trout stream that has shown the ability in past years to produce between 300 and 600 total Brown Trout per mile with adult catch rates in excess of 150 fish/mile when appropriately stocked. Natural reproduction and recruitment are limited, and stocking is integral to maintaining the trout fishery in Rocky Run. The segment of Rocky Run currently classified as Class 2 is correctly classified and no change in status is recommended. It is recommended that stocking of fingerling trout continue at Rocky Run despite not meeting the minimum fishable population standard of 50 adult trout per mile stream-wide in 2019. It should be noted that when 2019 data from the highly marginal upper end of the Class 2 section (site 71; Cuff Road) and the Class 3

section (site 70; State Highway 51) were excluded, the adult Brown Trout catch rate at sites 68 and 69 averaged 57.5 fish/mile, thus exceeding the minimum fishable population standard. Sites 68 and 69 are both located on public land; the publicly accessible section of Rocky Run has the greatest potential to produce a viable Brown Trout fishery.

The management goal for Rocky Run is to re-create a viable Brown Trout fishery that offers an adequate harvest opportunity for anglers. The objective is an average adult Brown Trout catch rate greater than 150 fish/mile averaged across sample sites 68 and 69, a catch rate that was attained through stocking in the recent past. The management strategy is to stock large fingerling Brown Trout at the state-recommended rate. Stocking large fingerlings instead of small fingerlings should allow stocked Brown Trout to escape predation by Creek Chubs, Bullheads, or other piscivorous warm water fishes living in Rocky Run, thus improving survival to age 1 and beyond. Additionally, communication between Fisheries Management and District Operations staff will be essential to ensure adequate distribution of stocked fingerlings throughout the Class 2 stream segment.

Rainbow Trout provided an additional harvest opportunity for anglers with an average electrofishing catch rate of 15 legally harvestable fish per mile. Harvestable Rainbow Trout are a vital supplement to the Brown Trout fishery in Rocky Run during a period when adult Brown Trout abundance has been reduced significantly compared to past years. Creel data from 2018 suggest that Rainbow Trout stocked in Rocky Run are utilized and stocking of yearling Rainbow Trout in Rocky Run should continue. The current trout fishing regulation protects fish to adult size while still providing ample harvest opportunities on a stream where adult trout density is high and some harvest is needed to keep adult density from becoming too high. No regulation change is recommended at this time.

No trout were collected from the single location in the Class 3 segment of Rocky Run. This segment is correctly classified and no change in status is recommended. This location should be surveyed during each rotation, but the data should not be included in calculations of mean catch rates in the Class 2 segment of Rocky Run.

As mentioned previously, Rocky Run is a poor candidate for intensive trout habitat improvement projects due to the remoteness of the stream in relation to access points to Rocky Run Creek Fishery Area, the prevalence of wetlands in the stream corridor, and the presence of several sensitive species. While an active program of outreach for the purpose of land acquisition is not likely to occur, offers to sell or donate private lands adjoining the Rocky Run Fishery Area to the Department should be considered provided they fall within the NRB project boundary.

Rowan Creek

Rowan Creek had the second highest mean total Brown Trout catch rate out of 9 streams in the central Columbia County management group in 2019. On a broader scale, total trout abundance was high, placing between the 65th and 75th percentiles for the Southeastern Till Plains region and between the 75th and 90th percentiles statewide. Brown Trout abundance in the predominantly Class 1 upper section of Rowan Creek was higher than the Class 2 lower section by a factor of 3 to 1. Across all sampling locations, abundance of age 0 Brown Trout (age 0 CPUE; natural reproduction) was high, placing between the 65th and 75th percentiles compared to streams in regional and statewide comparisons. Age 0 abundance in upper Rowan Creek was higher than lower Rowan Creek by a factor of 5 to 1, and this difference was driven by habitat-related factors. Natural recruitment as measured by age 1 trout abundance was medium overall, placing between 35th and 50th percentiles regionally, and between the 50th and 65th percentiles statewide. Age 1 trout abundance was higher in upper Rowan Creek compared to lower Rowan Creek by a factor of 2 to 1. Again, this was attributed to habitat differences between the two sections and resultant lower natural reproduction in lower Rowan Creek; fewer trout produced equals fewer trout reaching age 1. Adult Brown Trout abundance was high, placing between the 75th and 90th percentiles in regional and statewide comparisons. Abundance of preferred-length Brown Trout was also high, again placing between the 75th and 90th percentiles regionally and statewide. Brook Trout are present in Rowan Creek at very low abundance, with only the occasional individual encountered and this is not likely to change. Sampling location 63 (400 meters downstream of the

sewage treatment plant) should be permanently added to the sampling rotation to provide a second sample site in the Class 2 segment.

Natural reproduction and recruitment of Brown Trout are occurring at high levels in upper Rowan Creek, and adult and preferred-length fish are also present at high levels. Upper Rowan Creek is predominantly Class 1 water and based on 2019 data this classification is correct and no change is needed. Lower Rowan Creek is Class 2 water and based on 2019 data this classification is also correct and no change is needed. While water quality, temperature, and available cover are all very good and well-suited to holding larger trout, spawning habitat is lacking and lower Rowan Creek does not have the capacity to naturally produce enough trout to occupy the available habitat. This is also a major reason that trout abundance in lower Rowan Creek rebounded slower than in upper Rowan Creek following major declines in trout abundance in both sections from 2013 to 2014. Moving forward, the management goal is to re-create the excellent Brown Trout fishery that recently existed in lower Rowan Creek. The objective is an adult Brown Trout catch rate ≥ 300 fish/mile in the Class 2 segment. This would place above the 65th percentile compared to Class 1 Brown Trout streams statewide. This would also bring adult abundance closer to the mean adult catch rate of 348 fish/mile at the lower Rowan Creek trend sampling location observed from 2009-2013. Stocking of Brown Trout in the Class 2 section of Rowan Creek should continue with large fingerlings as the size class of choice.

Rainbow Trout provide an additional harvest opportunity for anglers stream-wide with an average electrofishing catch rate of 33 legally harvestable trout per mile. Rowan Creek experiences significant fishing pressure along its entire length due to the vast amount of public access available and the high quality of the trout fishery. Creel data from 2018 suggest Rainbow Trout are well utilized, with over 60% of stocked fish being caught by anglers in Columbia County streams; stocking of yearling Rainbow Trout in Rowan Creek should continue. The current trout fishing regulation protects fish to adult size while still providing ample harvest opportunities on a stream where adult trout density is

high and some harvest is needed to keep adult density from becoming too high. No regulation change is recommended at this time.

Sampling on upper Rowan Creek at site 51 (upstream of Goose Pond Rd.) in 2013 and 2019 indicated that the unclassified section holds a low-density population of Brown Trout. Natural reproduction and recruitment of yearling trout was relatively low above Goose Pond Road, and the population was composed mostly of adult fish. This part of Rowan Creek is narrow but deep, with good cover in the form of undercut banks and overhanging vegetation, but lacking rock substrate needed for good natural reproduction. Moving forward it is recommended that additional sampling be conducted on upper Rowan Creek to gather data in support of reclassifying the unclassified section to Class 1. Sampling should continue upstream of Goose Pond Road, but should also occur at one location between Goose Pond Road and the confluence of Rowan Creek with the unnamed tributary stream (WBIC 1264300) which serves as the current upstream boundary for the Class 1 section. Sampling should also occur on the unnamed tributary to determine its status with the goal of classifying the stream if the data support it.

State ownership of lands along Rowan Creek is extensive and the stream is by far the most accessible of any in the county for trout fishing. Rowan Creek Fishery Area also provides good hunting and trapping opportunities in addition to the excellent fishery. While an active program of outreach for the purpose of land acquisition is not likely to occur, offers to sell or donate private lands adjoining Rowan Creek Fishery Area to the Department should be considered provided they fall within the NRB project boundary. One potential difficulty is that the NRB project boundary runs diagonally through adjacent private land parcels along much of the stream corridor rather than following adjacent parcel lines. This has prevented WDNR from acquiring desirable adjacent parcels that are bisected by the NRB project boundary. Every attempt should be made to alter the NRB project boundary to run along adjacent parcel lines as opposed to bisecting the parcels. This should occur during master planning efforts for state properties in the Central Sand Hills region of Wisconsin (in progress).

Unnamed Tributary to Rowan Creek (WBIC 1264100)

This stream held a mixed Brook and Brown Trout fishery in 2019 and Brook Trout were slightly more abundant. The stream had the second highest Brook Trout abundance out of 9 streams in the central Columbia County management group in 2019. On a broader scale, total Brook Trout abundance was low to medium, placing between the 25th and 35th percentiles for the Southeastern Till Plains region and between the 35th and 50th percentiles when compared statewide. Abundance of age 0 Brook Trout (age 0 CPUE; natural reproduction) was medium to high, placing between the 65th and 75th percentiles regionally, and between the 50th and 65th percentiles statewide. Natural recruitment as measured by age 1 trout abundance was low, but regional and statewide age 1 Brook Trout CPUE comparisons were not possible. Adult Brook Trout abundance was low to medium, placing between the 25th and 35th percentiles regionally the 50th and 65th percentiles statewide.

The unnamed tributary to Rowan Creek had the third lowest mean total Brown Trout CPUE out of 9 streams in the group in 2019. On a broader scale, total Brown Trout abundance was low, placing below the 25th percentile for the Southeastern Till Plains region and statewide. Brown Trout natural reproduction was not documented in 2019; age 0 CPUE was 0. Natural recruitment as measured by age 1 Brown Trout abundance was low, placing below the 25th percentile compared to streams regionally and statewide. Adult Brown Trout abundance was also low to medium, placing between the 25th and 35th percentiles regionally, but between the 35th and 50th percentiles when compared statewide. Preferred-length Brown Trout were not found, and this is likely a function of the small size of the stream and lack of suitable habitat for larger trout.

Natural recruitment of age 1 and older Brown Trout, and natural reproduction and recruitment of Brook Trout are occurring in this unnamed tributary to Rowan Creek. The stream has a total trout catch rate approaching 300 fish/mile despite no history of stocking. The stream is currently unclassified, but it is recommended that the stream be reclassified to Class 1. The stream is small and the naturally produced trout population is fully utilizing the available habitat. Trout abundance is not likely to be increased by

stocking, therefore a Class 2 designation would be inappropriate. The location sampled in 2019 should be permanently added to the 6-year sampling rotation for the central Columbia County stream management group. Currently the land downstream of County Highway CS where the tributary flows is owned by the former Poynette Sportsman's League. The Village of Poynette is currently attempting to purchase the parcel which would bring the land under public ownership.

Hinkson Creek

This stream held a mixed Brook and Brown Trout fishery in 2019 and Brook Trout were the predominant species. Hinkson Creek had the highest Brook Trout abundance out of 9 streams in the central Columbia County management group in 2019. On a broader scale, total Brook Trout abundance was medium to high, placing between the 50th and 65th percentiles for the Southeastern Till Plains region and between the 65th and 75th percentiles when compared statewide. Abundance of age 0 Brook Trout (age 0 CPUE; natural reproduction) was high, placing above the 90th percentile regionally, and between the 75th and 90th percentiles when compared statewide. Natural recruitment as measured by age 1 trout abundance was far higher than any other stream in the group, but regional and statewide age1 Brook Trout CPUE comparisons were not possible. Adult Brook Trout abundance was low to medium, placing between the 25th and 35th percentiles regionally the 50th and 65th percentiles statewide. No preferred-length Brook Trout were collected during the 2019 surveys of Hinkson Creek.

Hinkson Creek had the sixth highest mean total Brown Trout CPUE out of 9 streams in the central Columbia County management group in 2019. On a broader scale, total Brown Trout abundance was low to medium, placing below the 25th percentile for the Southeastern Till Plains region and between the 25th and 35th percentiles statewide. Abundance of age 0 Brown Trout (age 0 CPUE; natural reproduction) was low to medium, placing below the 25th percentile on a regional level and between the 25th and 35th percentiles statewide. Natural recruitment as measured by age 1 abundance was low, placing below the 25th percentile regionally and between the 25th and 35th percentiles compared to streams statewide. Abundance of both adult and preferred-length Brown

Trout were both low to medium, with each placing below the 25th percentile on a regional level and between the 25th and 35th percentiles statewide.

Natural reproduction and recruitment of both Brook and Brown Trout are occurring in Hinkson Creek. Trend data from site 58 indicated that Brown Trout natural reproduction and recruitment is medium compared to other trout streams regionally and statewide, and total abundance has increased for several years without the aid of stocking. Trend and rotational data from sites 50 and 58 indicated that Brook Trout natural reproduction is consistently high, placing above the 75th percentile for age 0 CPUE both regionally and statewide in most years. Recruitment of age 1 fish is variable, but generally medium to high in most years (years prior to 2019 were reflective of a combination of recruitment from naturally produced and stocked fish). For these reasons, it is recommended to reclassify Hinkson Creek from Class 2 to Class 1. Stocking is not needed to maintain the trout populations in the stream, and stocking is generally not recommended. One exception is stocking of Brook Trout using native genetics. Genetic testing in 2005 and 2017 indicated that the genetic makeup of Brook Trout in Hinkson Creek tended toward a native strain, but that domestic genetics were also reflected in the population. This inclusion of domestic genetics was due to multiple decades of stocking Brook Trout that were once thought to be of native Wisconsin origin, but that testing recently determined were descended from a domestic strain of Brook Trout brought to Wisconsin from the eastern United States many years ago. Future stocking of Brook Trout in Hinkson Creek would be allowed for the purpose of phasing out domestic genetics over time by repeatedly stocking native-strain fish.

The goal for Hinkson Creek is to maintain a viable Brook Trout fishery with an adult catch rate ≥ 75 fish/mile. Currently the county base regulation protects trout to adult sizes while still providing a harvest opportunity in Hinkson Creek. Changing to a more restrictive regulation is not likely to produce an appreciably better fishery and no regulation change is recommended. Future sampling should occur on the unnamed tributary to Hinkson Creek (1264000) to investigate its potential as a trout stream. The stream was surveyed by WDNR Water Quality staff in May 2019 and several yearling

and adult Brook Trout were found. However, the survey did not follow the standard protocol utilized by WDNR Fisheries Management, and as such the data are not reported here.

Hinkson Creek Fishery Area provides good hunting and trapping opportunities in addition to the trout fishery. While an active program of outreach for the purpose of land acquisition is not likely to occur, offers to sell or donate private lands adjoining Hinkson Creek Fishery Area to the Department should be considered provided they fall within the NRB project boundary. On lands currently owned by WDNR, Hinkson Creek is a poor candidate for intensive trout habitat improvement projects due to its low gradient, the prevalence of adjacent wetlands, and the soft sand and organic substrates that are found throughout the creek. However, Hinkson Creek may be a good candidate for low-intensity improvements such as tree and brush removals from the banks to improve fishability for anglers, or installation of structures like brush bundles by hand in the stream. Increasing overhead cover will be a key to increasing adult Brook Trout abundance in this stream which is generally wide and shallow. Utilizing techniques that benefit Brook Trout instead of Brown Trout will be necessary to avoid tipping the balance in favor of Brown Trout in this already mixed fishery.

Currently, little trout population data have been collected from the state-owned portion of Hinkson Creek. All trout rotational and trend monitoring locations are located on privately held sections of the stream, and the trend sampling site is located where intensive habitat improvement was done with private funding on private land. Collecting additional fishery data from publicly held stream segments that are more reflective of the natural condition of the stream will benefit managers understanding of what public users encounter on the landscape. Stream electrofishing surveys should be conducted on Hinkson Creek in both the eastern and western parcels of Hinkson Creek Fishery Area to determine current trout abundance as well as to assess any factors limiting the trout population in those areas. The results will inform managers on the potential to complete successful trout habitat improvement projects at Hinkson Creek Fishery Area.

Spring Creek

Spring Creek had the fifth highest mean total Brown Trout CPUE out of 9 streams in the central Columbia County management group in 2019. On a broader scale, total Brown Trout abundance was low, placing between the 25th and 35th percentiles compared to streams in both the Southeastern Till Plains region and statewide. Abundance of age 0 Brown Trout (age 0 CPUE; natural reproduction) was low, placing between the 25th and 35th percentiles when compared regionally and statewide. Natural recruitment as measured by age 1 trout abundance was low to medium, placing below the 25th percentile regionally, and between the 35th and 50th percentiles statewide. Adult Brown Trout abundance was also low to medium, placing between the 25th and 35th percentiles regionally, and between the 35th and 50th percentiles when compared statewide. Abundance of preferred-length Brown Trout was medium, placing between the 50th and 65th percentiles when compared regionally and statewide.

Trout abundance declined significantly in Spring Creek stream-wide after 2013, and abundance has yet to recover to levels observed during the 2007-2013 period. Trout catch rates at rotational sites 62, 60, and 59 are presented in Figures 27, 28, and 29, respectively. These sites were formerly sampled on a 3-year rotation but sites 60 and 59 were sampled annually beginning in 2016 following a regulation change to the segment of Spring Creek downstream of County Highway J, while site 62 remained on the rotational schedule. Trout abundance at site 62 (Riddle Road) decreased by 84% from 2013 to 2019. Site 62 is located where Spring Creek exits Lodi Marsh, and stream temperatures recorded during sampling visits have been on the rise, from 68.2F in 2013 to 71.2F in 2016, and 75.6F in 2019. Dissolved oxygen levels also appeared to be lower in 2016 (4.3ppm) and 2019 (6.1ppm) compared to 2013 (8.3ppm). Further investigation into stream temperatures and dissolved oxygen levels on July 29, 2016 (one day after the 2016 survey at site 62) revealed a gradient of decreasing water temperature and increasing dissolved oxygen and percent oxygen saturation moving in a downstream direction from Riddle Road.

Increased stream temperature and lower dissolved oxygen levels likely explain much of the decline in trout abundance at site 62. The Lodi Marsh contains a vast spring network that feeds the stream, but it also contains highly organic soils and vast areas of decaying organic matter which creates a high biological oxygen demand (BOD). Oxygen levels in waters discharging from the marsh to Spring Creek are thus reduced, which can be stressful for trout, particularly when levels fall under 5ppm. Another hypothesis is that southern Wisconsin has been in a relatively wet weather pattern over the past few years and Lodi Marsh may be holding more standing water than during dry periods. Aerial imagery supports this hypothesis, with 2017 and especially 2018 imagery showing an area of lentic water in the marsh covering a much larger surface area than is seen in imagery from prior years. These areas of standing water warm during the summer, with the cold groundwater produced by springs not enough to counteract the warm standing water, and therefore discharge from the marsh to the stream was warmer. The increased stream temperature then manifested itself as thermal stress for trout. To further assess the degree to which conditions in the Lodi Marsh are impacting downstream areas of Spring Creek, it is recommended that data logging equipment be installed in upper Spring Creek to track temperature and dissolved oxygen levels there. The information collected will help inform managers on possible actions to mitigate stressful conditions for trout in Spring Creek.

Further downstream, declines in Brown Trout abundance at other rotational survey locations from 2013 to 2016 were also significant, with a 53% decline during that period at site 60 and a 77% decline at site 59. Trout abundance continued to decline at site 60, placing by an additional 28% from 2016 to 2019. The trout catch rate bottomed out at site 59 in 2017, improved somewhat in 2018, and then declined sharply again in 2019. Declines in trout abundance at these rotational survey sites match patterns observed at the trend sampling location, and mirror general trends observed on other streams such as Rowan Creek during that time, particularly the sharp drop in trout abundance after 2013. Much like trout abundance in the Class 2 portion of Rowan Creek, Class 2 Spring Creek has been slow to recover. Natural reproduction and recruitment are modest in Spring Creek compared to Class 1 stream segments like upper Rowan Creek or South Branch

Duck Creek, and as a result recovery is occurring more slowly after events like the 2012-2014 period of a drought summer followed by consecutive hard winters. However, just as trout abundance began to show signs of recovery at some sampling locations on Spring Creek, the massive flash flood in March 2019 set things back once again. Significant habitat alterations occurred at rotational sampling locations 60 and 59 like those observed at the trend sampling location (site 61). New layers of unconsolidated gravel and cobble were deposited on top of existing riffles, reducing depth and eliminating valuable nursery habitat for age 0 and age 1 fish, and at site 59 an area of deep, fast water and large woody debris that once held good numbers of adult trout was eliminated when the large woody debris was swept away, and the hole filled in with new deposits of rock and gravel. These habitat alterations helped to explain declines in trout abundance from 2018 to 2019.

It should be noted that stocking of fingerling trout in Spring Creek was significantly reduced in 2014 due to the reduced hatchery production at Nevin State Fish Hatchery mentioned previously. However, numbers of fish stocked quickly returned to near previous levels in Spring Creek, unlike at Rocky Run, and changes in annual fingerling stocking levels likely do not explain as much of the observed changes in abundance. Changes in angler behavior resulting from regulation changes also do not explain reduced trout abundance in Spring Creek. Regulation changes in 2016 saw the regulation in one segment of Spring Creek remain the same (8 inch minimum, 3 fish daily bag limit, no bait restrictions upstream of County Highway J), become less restrictive in another segment (15/1/artificial lures only to 12/2/artificial lures only from County Highway J downstream to the second State Hwy. 113 bridge), and become more restrictive in a third segment (8/3/no bait restrictions to 12/2/artificial lures only from the second State Hwy. 113 bridge downstream to Lake Wisconsin). Observed population trends were the same in all segments of the stream, regardless of the regulation. Declines in trout abundance in Spring Creek are more likely due to a combination of environmental conditions and habitat alterations outlined previously than stocking or angler harvest-related factors.

Natural reproduction and recruitment of Brown Trout is occurring in Spring Creek, but not at levels observed in Class 1 trout streams in Columbia County, regionally, and statewide. Spring Creek is Class 2 water and based on 2019 data this classification is correct and no change is needed. Moving forward, the management goal for Spring Creek is to re-create the excellent trout fishery that once existed there. The objective is an average adult Brown Trout catch rate ≥ 300 fish/mile at rotational sampling sites. This would place Spring Creek above the 65th percentile compared to Class 1 Brown Trout streams statewide and would be close to the adult Brown Trout catch rate of 322 fish/mile averaged across all rotational sampling locations from 2007-2013.

It is recommended that stocking of fingerling Brown Trout in Spring Creek should continue with large fingerlings as the size class of choice for stocking. As with other area streams, stocking large fingerlings instead of small fingerlings should allow stocked Brown Trout to escape predation by piscivorous warm water fishes living in Spring Creek, thus improving survival to age 1 and beyond. Also, because large fingerlings are stocked later in the year, managers will be able to conduct trend monitoring prior to stocking, and managers can use the age 0 catch rates from those surveys as indices of natural reproduction in all years. Again, communication between Fisheries Management staff and District Operations staff on stocking locations is critical. In some years, fingerling trout were stocked in spring areas in the Lodi Marsh and this practice should be discontinued due to oxygen and thermal impairments evident along upper Spring Creek. Stocked fingerlings should be distributed among several locations from the Pleasant Street bridge in Lodi down to the second State Highway 113 bridge. Stocking of surplus adult broodstock Brown Trout provides additional opportunities for anglers to catch larger trout, and it is recommended that stocking of surplus adults continue moving forward.

Rainbow Trout provide an additional harvest opportunity for anglers in Spring Creek with an average catch rate of 17 legally harvestable fish/mile during 2019 surveys. Spring Creek experiences significant fishing pressure along its entire length due to the vast amount of public access available, and Rainbow Trout help to take some of the

harvest pressure off Brown Trout. This is especially important considering the significant declines in Brown Trout abundance stream-wide after 2013. Creel data from 2018 suggest Rainbow Trout are well utilized, with over 60% of stocked fish being caught by anglers fishing in Columbia County streams; stocking of yearling Rainbow Trout in Spring Creek should continue.

Currently, Spring Creek downstream of the confluence with Bohlman Branch is eligible for Streambank Easement acquisition. Acquisition of easements in this eligible portion of Spring Creek should be pursued, focusing on landowners with two-bank ownership on larger parcels of land. Two-bank frontage on small parcels, or parcels with only single-bank frontage are low priority for acquisition on Spring Creek. Acquisition of new streambank easements would provide new opportunities to complete trout stamp funded habitat improvement projects. Opportunities for habitat improvement projects on current WDNR lands along Spring Creek are limited. Projects have already been completed on some segments, while others have good natural habitat and don't warrant intensive improvements. Other areas of WDNR ownership along Spring Creek have prevalent wetlands or have thermal or oxygen impairments that preclude them from being good candidates for habitat work.

Current trout fishing regulations protect fish to adult or preferred-lengths in Spring Creek depending on the stream segment while still providing opportunities for harvest as well as the opportunity to fish in waters where only artificial baits or lures are allowed. Recent declines in trout abundance are not harvest related and no regulation change is needed at this time.

Bohlman Branch

Bohlman Branch had the third highest mean total Brown Trout CPUE out of 9 streams in the central Columbia County management group in 2019. On a broader scale, total Brown Trout abundance was medium, placing between the 50th and 65th percentiles for both the Southeastern Till Plains region and statewide CPUE comparisons. Abundance of age 0 Brown Trout (age 0 CPUE; natural reproduction) was medium, placing between

the 50th and 65th percentiles when compared regionally and statewide. Natural recruitment as measured by age 1 trout abundance was low to medium, placing between the 25th and 35th percentiles regionally, and the 35th and 50th percentiles when compared statewide. Adult Brown Trout abundance was high, placing between the 65th and 75th percentiles regionally and statewide. Preferred-length Brown Trout abundance was also high, placing between the 75th and 90th percentiles regionally and statewide.

Total Brook Trout abundance was low, placing below the 25th percentile regionally and statewide. Abundance of age 0 Brook Trout (age 0 CPUE; natural reproduction) was medium, placing between the 50th and 65th percentiles regionally, and between the 35th and 50th percentiles when compared statewide. Natural recruitment as measured by age 1 trout abundance was relatively low, but regional and statewide age 1 Brook Trout CPUE comparisons were not possible. Adult Brook Trout abundance was low, placing below the 25th percentile regionally and between the 25th and 35th percentiles statewide.

Natural reproduction and recruitment of both Brook and Brown Trout are occurring in Bohlman Branch. The stream had a total trout catch rate (Brook and Brown Trout) exceeding 750 fish/mile in 2019 despite no history of fingerling stocking. Brown Trout natural reproduction and recruitment are around the middle of the pack and abundance of adult and preferred-length Brown Trout are both high in regional and statewide comparisons. For these reasons it is recommended to reclassify Bohlman Branch from Class 2 to Class 1. Moving forward, the management goal is to maintain the excellent Brown Trout fishery in Bohlman Branch. The objective is an average adult Brown Trout catch rate ≥ 400 fish/mile during rotational sampling. Stocking is not needed to sustain the trout fishery, but annual stocking of surplus adult broodstock Brook Trout may continue. Surplus adult stockings are likely what started the Brook Trout population in Bohlman Branch that showed evidence of natural reproduction and recruitment in 2019. The only current management strategy for Bohlman Branch is to continue monitoring the trout population in rotational sampling years. Both locations sampled in 2019 should be permanently added to the 6-year sampling rotation for the central Columbia County stream management group.

Bohlman Branch should be added as a Streambank Easement eligible water. Acquisition of easements upstream of current WDNR fee ownership would serve to protect the stream corridor and improve the health of the stream. This is especially true along County Highway K upstream of Mack Road, where Bohlman Branch runs between a row-crop field and a livestock pasture. Water quality and volume are impressive in this section but both banks are steep and eroding, the channel is wide and shallow, and sediment deposition in the stream is severe, with soft sediment overlaying hard substrates often reaching knee deep. Easement acquisition would force adjacent row-crop agriculture back away from the stream bank and allow WDNR to complete trout stamp funded habitat improvement projects that could address erosion and sedimentation issues currently hindering the stream's performance.

MANAGEMENT RECOMMENDATION SUMMARY

- Retain current trout fishing regulations on all streams in the management group.
- Reclassify the Class 3 section of Middle Branch Duck Creek as Class 2.
- Discontinue all trout stocking in South Branch Duck Creek.
- Stock large fingerling Brown Trout in Middle Branch Duck Creek and Rocky Run instead of small fingerlings.
- Stock large fingerling Brook Trout in Jennings Creek and discontinue stocking of Brown Trout.
- Discontinue Rainbow Trout stocking in Jennings Creek.
- Conduct "trout potential" surveys on the unclassified upper segment of Rowan Creek, and an unnamed tributary to Rowan Creek in the Town of Arlington (WBIC 1264300) to determine trout population status and reclassify as appropriate.
- Reclassify an unnamed tributary to Rowan Creek in the Town of Dekorra (WBIC 1264100) from unclassified to Class 1.
- Stock large fingerling Brown Trout in the Class 2 section of Rowan Creek (lower Rowan Creek) instead of small fingerlings.

- Reclassify Hinkson Creek from Class 2 to Class 1.
- Conduct “trout potential” surveys on the unnamed tributary to Hinkson Creek in the Town of Dekorra (WBIC 1264000; locally South Branch Hinkson Creek) to determine trout population status and classify as appropriate.
- Discontinue fingerling Brook Trout stocking in Hinkson Creek with the exception that fingerling trout may be stocked as part of a project to displace domestic-strain Brook Trout by stocking native-strain fish.
- Stock large fingerling Brown Trout in Spring Creek instead of small fingerlings.
- Reclassify Bohlman Branch from Class 2 to Class 1.
- Install appropriate data logging equipment to track temperature and dissolved oxygen in upper Spring Creek in the Lodi Marsh.

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TABLES AND FIGURES

Table 1. Land cover breakdown for the Duck Creek-Wisconsin River HUC-10 watershed (LW20) in the Lower Wisconsin River basin.

Land Cover	Percent of Watershed (2000) ¹
Agriculture	46.1%
Wetland (Total)	17.8%
<i>Forested</i>	7.3%
<i>Emergent/Wet Meadow</i>	5.8%
<i>Lowland Shrub</i>	4.7%
Forest (Total)	17.4%
<i>Broad-leaf deciduous</i>	14.6%
<i>Coniferous</i>	1.7%
<i>Mixed Deciduous/Coniferous</i>	1.1%
Grassland	15.5%
Open Water	2.0%
Development	0.6%
Barren	0.5%

1. Ripp et al. 2002

Table 2. Land cover breakdown for the Lake Wisconsin-Wisconsin River HUC-10 watershed (LW19) in the Lower Wisconsin River basin.

Land Cover	Percent of Watershed (2000) ¹
Agriculture	45.9%
Forest (total)	26.6%
<i>Broad-leaf deciduous</i>	23.5%
<i>Coniferous</i>	1.6%
<i>Mixed Deciduous/Coniferous</i>	1.5%
Grassland	14.3%
Open water	6.6%
Wetland (total)	4.8%
<i>Forested</i>	1.8%
<i>Emergent/wet meadow</i>	1.6%
<i>Lowland Shrub</i>	1.4%
Other	1.1%
Development	0.7%

1. Ripp et al. 2002

Table 3. Stocking quotas for central Columbia County, Wisconsin trout streams prior to the 2019 evaluation.

Waterbody	Trout Class	Species ¹	Strain ²	Age Class ³	Base Quota	Mark ⁴
Spring Creek	2	BRT	TCSF	A (surplus broodstock)	40	U
Spring Creek	2	BRT	TCSF	SMF	6,000	U
Spring Creek	2	RBT	Erwin	YLG	2,000	U
Spring Creek	2	RBT	Erwin	SMF	50	U
Bohlman Branch	2	BKT	Southwest Feral	A (surplus broodstock)	50	U
Rowan Creek	1,2	BRT	TCSF	SMF	5,000	U
Rowan Creek	1,2	BRT	TCSF	A (surplus broodstock)	40	U
Rowan Creek	1,2	RBT	Erwin	YLG	2,500	U
Rocky Run	2,3	BKT	Southwest Feral	A (surplus broodstock)	50	AD
Rocky Run	2,3	BRT	TCSF	A (surplus broodstock)	50	AD
Rocky Run	2,3	BRT	TCSF	SMF	6,100	U
Rocky Run	2,3	RBT	Erwin	YLG	1,500	U
Middle Br. Duck Creek	3	BRT	TCSF	SGF	2,150	U
Middle Br. Duck Creek	3	RBT	Erwin	YLG	675	U
Jennings Creek	2	BRT	TCSF	SMF	2,000	U
Jennings Creek	2	RBT	Erwin	YLG	1,200	U

1. BRT=Brown Trout, BKT=Brook Trout, RBT=Rainbow Trout
2. TCSF=Timber Coulee Southwest Feral
3. SMF=small fingerling, approximately 1.7 inches, stocked in June. A=adult.
4. U=Unmarked, AD=Adipose Fin Clip

Table 4. Description of trout sampling locations for central Columbia County streams during the 2019 evaluation. Refer to Figure 1 for the mapped location of each site.

Waterbody	WBIC ¹	Site number (map)	Trout class	Location name ²	Start Latitude	Start Longitude	End Latitude	End Longitude
Rowan Creek	1263700	51	U	14M US Goose Pond Rd.	43.36919	-89.36208	43.36927	-89.36104
Rowan Creek	1263700	49	1	42M US Loveland Rd.	43.37667	-89.37125	43.37624	-89.37074
Rowan Creek	1263700	48	1	2016 Habitat DS Loveland Rd.	43.37884	-89.37492	43.37819	-89.37267
Rowan Creek	1263700	52	1	40M US Snowmobile Bridge	43.38510	-89.38199	43.38512	-89.38164
Rowan Creek	1263700	73	1	East Rd. Pipeline Crossing	43.38674	-89.39177	43.38655	-89.39096
Rowan Creek	1263700	77	1	20M US STH 51	43.38633	-89.39494	43.38644	-89.39324
Rowan Creek	1263700	55	1	112M DS Ballpark Foot Bridge	43.38808	-89.40550	43.38850	-89.40424
Rowan Creek	1263700	63	2	400M DS STP Outfall	43.38511	-89.41260	43.38517	-89.41114
Rowan Creek	1263700	72	2	Lower Rowan	43.39778	-89.45191	43.39634	-89.45277
UNT Rowan Creek	1264100	57	U	120M DS CTH CS	43.38096	-89.41954	43.38132	-89.41977
Hinkson Creek	1263900	50	2	Thompson Rd.	43.41640	-89.41209	43.41691	-89.41128
Hinkson Creek	1263900	58	2	DS McMillan Rd.	43.41274	-89.42912	43.41218	-89.42834
Hinkson Creek	1263900	64	2	DS Kent Rd.	43.40546	-89.45973	43.40620	-89.45808
Spring Creek	1261900	62	2	US Riddle Rd.	43.30624	-89.53347	43.30697	-89.53252
Spring Creek	1261900	61	2	245M DS Park Footbridge	43.31991	-89.53030	43.31829	-89.52950
Spring Creek	1261900	60	2	295M DS CTH J	43.32955	-89.53955	43.32857	-89.53841
Spring Creek	1261900	59	2	532M DS STH 113	43.34115	-89.56114	43.33881	-89.55958
Bohlman Branch	1262300	53	2	30M US Mack Rd.	43.31994	-89.51124	43.31200	-89.50915
Bohlman Branch	1262300	54	2	140M DS DNR Foot Bridge	43.31689	-89.52103	43.31789	-89.52010
Jennings Creek	1270200	76	2	188M DS Ludwig Rd.	43.47592	-89.19160	43.47686	-89.19160
Jennings Creek	1270200	75	2	13M US Old B Rd.	43.47879	-89.21595	43.47891	-89.21477
MBR Duck Creek	1269300	74	U	120M DS Raddatz Rd.	43.49226	-89.20705	43.49258	-89.20645
MBR Duck Creek	1269300	65	3	70M US CTH SS	43.49188	-89.22599	43.49148	-89.22427
MBR Duck Creek	1269300	67	3	270M DS Schliesmann Rd.	43.48810	-89.24744	43.48897	-89.24699
MBR Duck Creek	1269300	66	3	175M DS Roelke Mouth	43.48870	-89.25047	43.48812	-89.24902
SBR Duck Creek	1269600	56	1	5M US Schliesmann Rd.	43.48680	-89.24640	43.48583	-89.24618
Rocky Run	1265000	71	2	US Cuff Rd.	43.44203	-89.33080	43.44780	-89.32990
Rocky Run	1265000	68	2	30M US DNR Snowmobile Bridge	43.45390	-89.35316	43.45357	-89.35091
Rocky Run	1265000	69	2	TU Riffle on Blewett's	43.45670	-89.37496	43.45561	-89.37362

Table 4. Continued

Waterbody	WBIC ¹	Site number (map)	Trout class	Location Name ²	Start Latitude	Start Longitude	End Latitude	End Longitude
Rocky Run	1265000	70	3	50M US STH 51	43.45881	-89.40612	43.45726	-89.40414

1. WBIC = Waterbody Identification Code.

2. US = Upstream, DS = Downstream, STH = State Highway, CTH = County Highway, STP = Sewage Treatment Plant.

Table 5. Sampling station metrics for central Columbia County trout streams during the 2019 evaluation. Refer to Figure 1 for the mapped location of each site.

Waterbody	Site number (map)	Survey date	Gear used	Mean stream width (m)	Station length (m)	CPUE factor ¹	Flow rate (cfs)	Stream temp. (F)	Dissolved oxygen (ppm)	n species	Coldwater IBI score ²
Rowan Creek	51	06/18/2019	BP	1.4	100	16.1	2.5	56.5	8.8	2	60 (Good)
Rowan Creek	49	06/17/2019	Barge	3.5	140	11.4	7.8	55.6	10.5	4	80 (Good)
Rowan Creek	48	06/17/2019	Barge	3.9	380	4.2	10.6	51.3	10.5		NA
Rowan Creek	52	07/03/2019	Barge	4.2	140	11.4	13.1	61.7	13.8	6	70 (Good)
Rowan Creek	73	07/01/2019	Barge	3.7	140	11.4	15.2	58.5	10.9	4	70 (Good)
Rowan Creek	77	07/15/2019	Barge	3.8	219	7.3	13.6	58.1	10.6	6	70 (Good)
Rowan Creek	55	07/01/2019	Barge	3.1	112	14.3	17.0	56.1	8.8	4	60 (Good)
Rowan Creek	63	07/18/2019	Barge	6.0	210	7.7	31.8	63.0	9.9	3	50 (Fair)
Rowan Creek	72	07/31/2019	Barge	6.2	210	7.7	32.1	55.6	8.6	7	50 (Fair)
UNT Rowan Creek	57	07/08/2019	BP	2.4	100	16.1	3.2	58.1	10.8	3	80 (Good)
Hinkson Creek	50	06/18/2019	BP	3.9	105	15.3	4.2	62.4	8.7	5	70 (Good)
Hinkson Creek	58	07/12/2019	Barge	3.3	110	14.6	6.7	60.2	9.1	8	60 (Good)
Hinkson Creek	64	07/18/2019	Barge	7.2	245	6.6	14.8	65.1		13	30 (Fair)
Spring Creek	62	07/16/2019	Barge	5.8	175	9.2	17.0	75.6	6.1	7	10 (Poor)
Spring Creek	61	07/16/2019	Barge	7.3	245	6.6	31.8	67.6	12.3	5	50 (Fair)
Spring Creek	60	07/16/2019	Barge	7.4	245	6.6	41.0	64.2	7.3	7	50 (Fair)
Spring Creek	59	07/16/2019	Barge	9.1	315	5.1	46.6	62.6	7.5	10	30 (Fair)
Bohlman Branch	53	07/02/2019	Barge	5.3	175	9.2	7.4	54.5	9.8	4	90 (Excellent)
Bohlman Branch	54	07/02/2019	Barge	3.6	140	11.4	10.6	52.9	10.4	3	80 (Good)
Jennings Creek	76	08/20/2019	Barge	4.3	140	11.4	7.4	59.0	8.2	9	30 (Good)
Jennings Creek	75	08/20/2019	Barge	4.6	140	11.4	12.4	56.8	7.8	11	50 (Fair)
MBR Duck Creek	74	08/20/2019	Barge	2.1	100	16.1	6.7	61.0	8.9	7	10 (Poor)
MBR Duck Creek	65	07/23/2019	Barge	6.7	175	9.2	27.2	59.0		15	20 (Poor)
MBR Duck Creek	67	07/23/2019	Barge	8.0	210	7.7	30.7	63.5		14	20 (Poor)
MBR Duck Creek	66	07/23/2019	Barge	7.9	175	9.2	37.4	64.4		12	30 (Fair)
SBR Duck Creek	56	07/12/2019	Barge	4.6	136	11.8	8.8	53.2	10.6	11	50 (Fair)
Rocky Run	71	08/02/2019	Barge	5.3	175	9.2	12.7	63.1	7.3	14	10 (Poor)
Rocky Run	68	07/25/2019	Barge	5.8	210	7.7	21.9	66.2		12	30 (Fair)

Table 5. Continued

Waterbody	Site number (map)	Survey date	Gear used	Mean stream width (m)	Station length (m)	CPUE factor ²	Flow rate (cfs)	Stream temp. (F)	Dissolved oxygen (ppm)	n species	Coldwater IBI score
Rocky Run	69	07/25/2019	Barge	6.3	210	7.7	26.1	68.0		11	60 (Good)
Rocky Run	70	07/31/2019	Barge	9.7	350	4.6	26.5	66.1	10.1	15	20 (Poor)

1. CPUE factor is the number of station lengths needed to equal one mile. The CPUE factor*catch=CPUE in fish/mile.
2. No IBI score could be calculated for site 48 because only trout were collected during the survey.

Table 6. Brown Trout CPUE percentile breakdown for fishery surveys conducted on Class 1 trout streams in the Southeast Wisconsin Till Plains region and statewide where at least one trout was collected, 2007-2014.

Percentile	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)	
	SE Till Plains	Statewide	SE Till Plains	Statewide	SE Till Plains	Statewide	SE Till Plains	Statewide	SE Till Plains	Statewide
10	110.6	33.3	0.0	0.0	25.5	12.5	31.3	0.0	0.0	0.0
25	266.2	138.9	3.1	0.0	104.5	50.0	79.8	31.7	0.0	0.0
35	322.2	249.3	17.7	12.4	164.7	95.7	116.7	66.7	9.1	7.7
50 (median)	572.7	427.3	66.7	50.0	242.9	188.5	183.3	155.6	23.1	24.0
65	962.9	714.9	183.9	154.0	350.4	325.0	360.3	300.0	51.7	48.4
75	1,117.7	1,000.0	341.7	310.4	500.0	472.0	514.3	433.3	71.0	66.7
90	1,686.7	1,709.5	786.7	993.0	757.1	927.5	886.7	882.9	144.4	135.7

Table 7. Brook Trout CPUE percentile breakdown for stream surveys conducted on Class 1 trout streams in the Southeast Wisconsin Till Plains region and statewide where at least one trout was collected, 2007-2014.

Percentile	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)	
	SE Till Plains	Statewide	SE Till Plains	Statewide	SE Till Plains	Statewide	SE Till Plains	Statewide	SE Till Plains	Statewide
10	35.0	21.1	0.0	0.0			11.1	0.0	0.0	0.0
25	114.3	81.8	0.0	0.0	NA	NA	39.3	16.7	0.0	0.0
35	172.5	134.5	1.7	16.7	NA	NA	66.7	33.3	0.0	0.0
50 (median)	344.4	251.7	24.5	66.7	NA	NA	130.0	57.9	3.3	0.0
65	833.5	416.7	53.6	161.9	NA	NA	294.2	100.0	16.0	4.4
75	1,057.1	583.3	131.3	288.6	NA	NA	366.9	155.6	19.5	11.1
90	1,423.8	1,150.0	265.0	842.4	NA	NA	497.5	339.3	49.5	33.3

Table 8. Brown Trout catch-per-unit effort (CPUE) for all sampling locations on central Columbia County trout streams in 2019.

Waterbody¹	Site number (map)	Date	CPUE total	CPUE age 0 (<4")	CPUE age 1 (4.0-7.9")	CPUE adult- total (≥8")	CPUE adult<preferred (8.0-11.9")	CPUE adult- preferred (≥12")
Rowan Creek	51	06/18/2019	193.2	0.0	16.1	177.1	48.3	128.8
Rowan Creek	49	06/17/2019	954.4	69.0	218.5	666.9	597.9	69.0
Rowan Creek	48	06/17/2019	855.7	105.9	182.2	567.7	516.8	50.8
Rowan Creek	52	07/03/2019	1,103.8	172.5	184.0	747.4	597.9	149.5
Rowan Creek	73	07/01/2019	1,724.7	80.5	448.4	1,195.8	1,011.8	184.0
Rowan Creek	77	07/15/2019	2,023.7	467.6	482.2	1,074.0	979.0	95.0
Rowan Creek	5C	07/01/2019	2,213.4	1,595.4	344.9	273.1	215.6	57.5
Rowan Creek	63	07/18/2019	490.6	84.3	138.0	268.3	191.6	76.7
Rowan Creek	72	07/31/2019	375.6	53.7	115.0	207.0	115.0	92.0
UNT Rowan Creek	57	07/08/2019	128.8	0.0	48.3	80.5	80.5	0.0
Hinkson Creek	50	06/18/2019	0.0	0.0	0.0	0.0	0.0	0.0
Hinkson Creek	58	07/12/2019	585.4	190.2	234.1	161.0	131.7	29.3
Hinkson Creek	64	07/18/2019	72.3	0.0	19.7	52.6	32.9	19.7
Spring Creek	62	07/16/2019	27.6	9.2	0.0	18.4	18.4	0.0
Spring Creek	61	07/16/2019	407.4	19.7	170.8	216.8	144.5	72.3
Spring Creek	60	07/16/2019	335.1	52.6	157.7	124.8	85.4	39.4
Spring Creek	59	07/16/2019	168.6	51.1	76.7	40.9	15.3	25.6
Bohlman Branch	53	07/02/2019	459.9	174.8	128.8	156.4	101.2	55.2
Bohlman Branch	54	07/02/2019	931.4	46.0	195.5	689.9	551.9	138.0
Jennings Creek	76	08/20/2019	69.0	0.0	11.5	57.5	23.0	34.5
Jennings Creek	75	08/20/2019	287.5	184.0	34.5	69.0	23.0	46.0
MBR Duck Creek	74	08/20/2019	16.1	0.0	16.1	0.0	0.0	0.0
MBR Duck Creek	65	07/23/2019	92.0	69.0	7.7	7.7	7.7	0.0
MBR Duck Creek	67	07/23/2019	107.3	15.3	46.0	46.0	30.7	15.3
MBR Duck Creek	66	07/23/2019	220.8	55.2	101.2	64.4	55.2	9.2
SBR Duck Creek	56	07/12/2019	1,740.0	1,373.0	142.0	224.9	153.9	71.0
Rocky Run	71	08/02/2019	9.2	0.0	9.2	0.0	0.0	0.0
Rocky Run	68	07/25/2019	46.0	0.0	0.0	46.0	46.0	0.0
Rocky Run	69	07/25/2019	253.0	99.7	84.3	69.0	30.7	38.3

Table 8. Continued

Waterbody¹	Site number (map)	Date	CPUE Total	CPUE age 0 (<4")	CPUE age 1 (4.0-7.9")	CPUE adult- total (≥8")	CPUE adult<preferred (8.0-11.9")	CPUE adult- preferred (≥12")
Rocky Run	70	07/31/2019	0.0	0.0	0.0	0.0	0.0	0.0
Mean Catch Rates								
Rowan Creek-All			1,103.9	292.1	236.6	575.2	474.9	100.4
Rowan Creek (Upper)			1,295.6	355.8	268.0	671.7	566.8	104.9
Rowan Creek (Lower)			433.1	69.0	126.5	237.6	153.3	84.3
UNT Rowan Creek			128.8	0.0	48.3	80.5	80.5	0.0
Hinkson Creek			219.2	63.4	84.6	71.2	54.9	16.3
Spring Creek			407.4	19.7	170.8	216.8	144.5	72.3
Bohlman Branch			695.6	110.4	162.1	423.1	326.6	96.6
Jennings Creek			178.2	92.0	23.0	63.2	23.0	40.2
MBR Duck Creek			220.8	55.2	101.2	64.4	55.2	9.2
SBR Duck Creek			1,740.0	1,373.0	142.0	224.9	153.9	71.0
Rocky Run			77.0	24.9	23.4	28.7	19.2	9.6

1. MBR = Middle Branch, SBR = South Branch

Table 9. Brook Trout catch-per-unit effort (CPUE) for all sampling locations on central Columbia County streams in 2019.

Waterbody¹	Site number (map)	Date	CPUE total	CPUE age 0 (<4")	CPUE age 1 (4.0-6.9")	CPUE adult- total (≥7")	CPUE adult<preferred (7.0-9.9)	CPUE adult- preferred (≥10")
Rowan Creek	51	06/18/2019	0.0	0.0	0.0	0.0	0.0	0.0
Rowan Creek	49	06/17/2019	0.0	0.0	0.0	0.0	0.0	0.0
Rowan Creek	48	06/17/2019	0.0	0.0	0.0	0.0	0.0	0.0
Rowan Creek	52	07/03/2019	11.5	0.0	0.0	11.5	11.5	0.0
Rowan Creek	73	07/01/2019	0.0	0.0	0.0	0.0	0.0	0.0
Rowan Creek	77	07/15/2019	7.3	7.3	0.0	0.0	0.0	0.0
Rowan Creek	55	07/01/2019	0.0	0.0	0.0	0.0	0.0	0.0
Rowan Creek	63	07/18/2019	0.0	0.0	0.0	0.0	0.0	0.0
Rowan Creek	72	07/31/2019	0.0	0.0	0.0	0.0	0.0	0.0
UNT Rowan Creek	57	07/08/2019	161.0	80.5	16.1	64.4	64.4	0.0
Hinkson Creek	50	06/18/2019	950.5	674.6	260.6	15.3	15.3	0.0
Hinkson Creek	58	07/12/2019	585.4	322.0	87.8	175.6	175.6	0.0
Hinkson Creek	64	07/18/2019	13.1	6.6	0.0	6.6	6.6	0.0
Spring Creek	62	07/16/2019	0.0	0.0	0.0	0.0	0.0	0.0
Spring Creek	61	07/16/2019	0.0	0.0	0.0	0.0	0.0	0.0
Spring Creek	60	07/16/2019	0.0	0.0	0.0	0.0	0.0	0.0
Spring Creek	59	07/16/2019	0.0	0.0	0.0	0.0	0.0	0.0
Bohlman Branch	53	07/02/2019	110.4	73.6	0.0	36.8	18.4	18.4
Bohlman Branch	54	07/02/2019	11.5	11.5	0.0	0.0	0.0	0.0
Jennings Creek	76	08/20/2019	126.5	80.5	23.0	23.0	23.0	0.0
Jennings Creek	75	08/20/2019	11.5	0.0	0.0	11.5	11.5	0.0
MBR Duck Creek	74	08/20/2019	0.0	0.0	0.0	0.0	0.0	0.0
MBR Duck Creek	65	07/23/2019	0.0	0.0	0.0	0.0	0.0	0.0
MBR Duck Creek	67	07/23/2019	0.0	0.0	0.0	0.0	0.0	0.0
MBR Duck Creek	66	07/23/2019	0.0	0.0	0.0	0.0	0.0	0.0
SBR Duck Creek	56	07/12/2019	11.8	11.8	0.0	0.0	0.0	0.0
Rocky Run	71	08/02/2019	0.0	0.0	0.0	0.0	0.0	0.0
Rocky Run	68	07/25/2019	0.0	0.0	0.0	0.0	0.0	0.0
Rocky Run	69	07/25/2019	0.0	0.0	0.0	0.0	0.0	0.0

Table 9. Continued

Waterbody¹	Site number (map)	Date	CPUE total	CPUE age 0 (<4")	CPUE age 1 (4.0-6.9")	CPUE adult- total (≥7")	CPUE adult<preferred (7.0-9.9)	CPUE adult- preferred (≥10")
Rocky Run	70	07/31/2019	0.0	0.0	0.0	0.0	0.0	0.0
Mean Catch Rates								
Rowan Creek-All			2.1	0.8	0.0	1.3	1.3	0.0
Rowan Creek (Upper)			2.7	1.0	0.0	1.6	1.6	0.0
Rowan Creek (Lower)			0.0	0.0	0.0	0.0	0.0	0.0
UNT Rowan Creek			161.0	80.5	16.1	64.4	64.4	0.0
Hinkson Creek			516.3	334.4	116.1	65.8	65.8	0.0
Spring Creek			0.0	0.0	0.0	0.0	0.0	0.0
Bohlman Branch			60.9	42.5	0.0	18.4	9.2	9.2
Jennings Creek			69.0	40.2	11.5	17.2	17.2	0.0
MBR Duck Creek			0.0	0.0	0.0	0.0	0.0	0.0
SBR Duck Creek			11.8	11.8	0.0	0.0	0.0	0.0
Rocky Run			0.0	0.0	0.0	0.0	0.0	0.0

1. MBR = Middle Branch, SBR = South Branch.

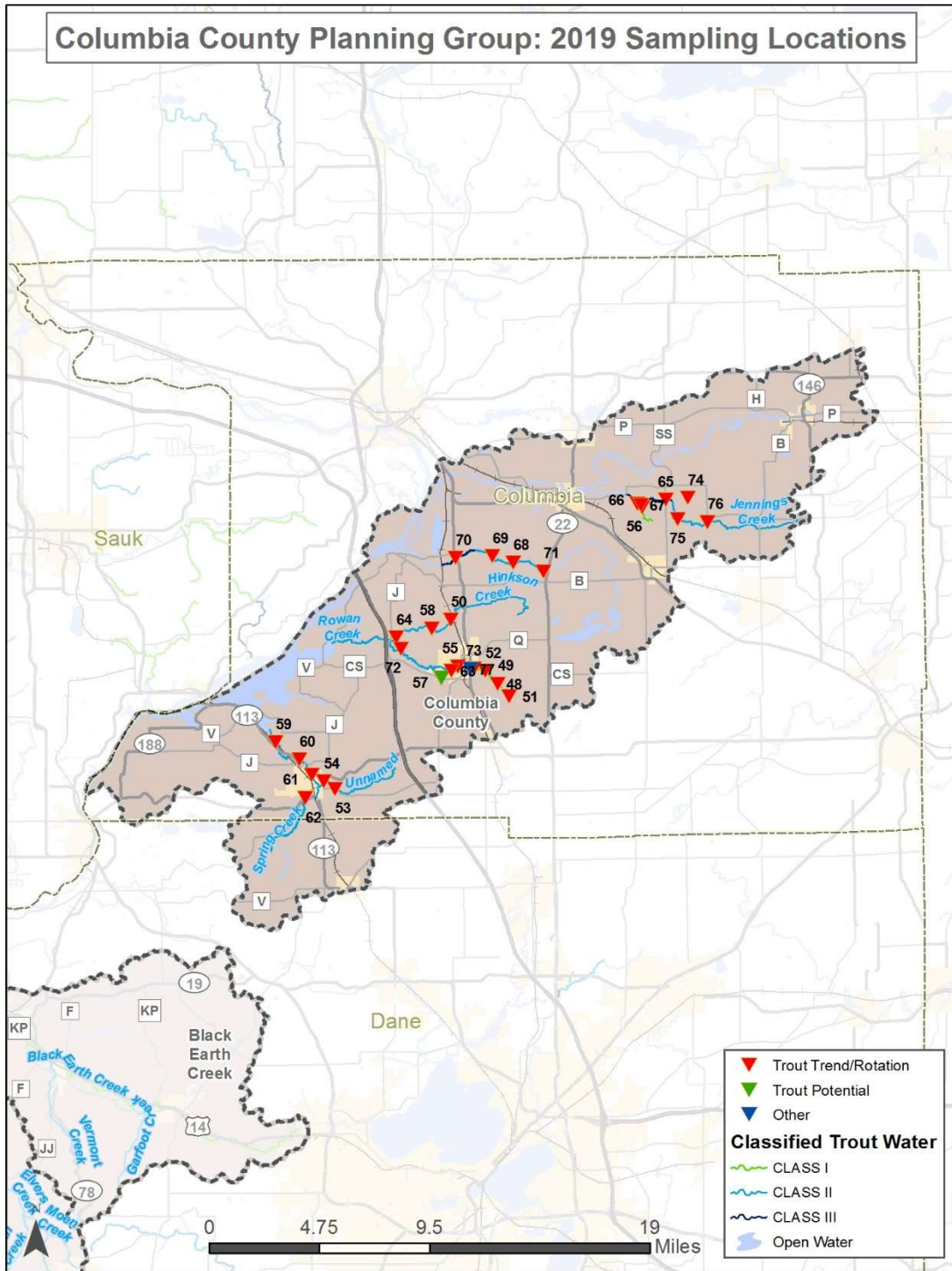


Figure 1. Trout class designations and 2019 fishery survey locations within the central Columbia County stream management group.

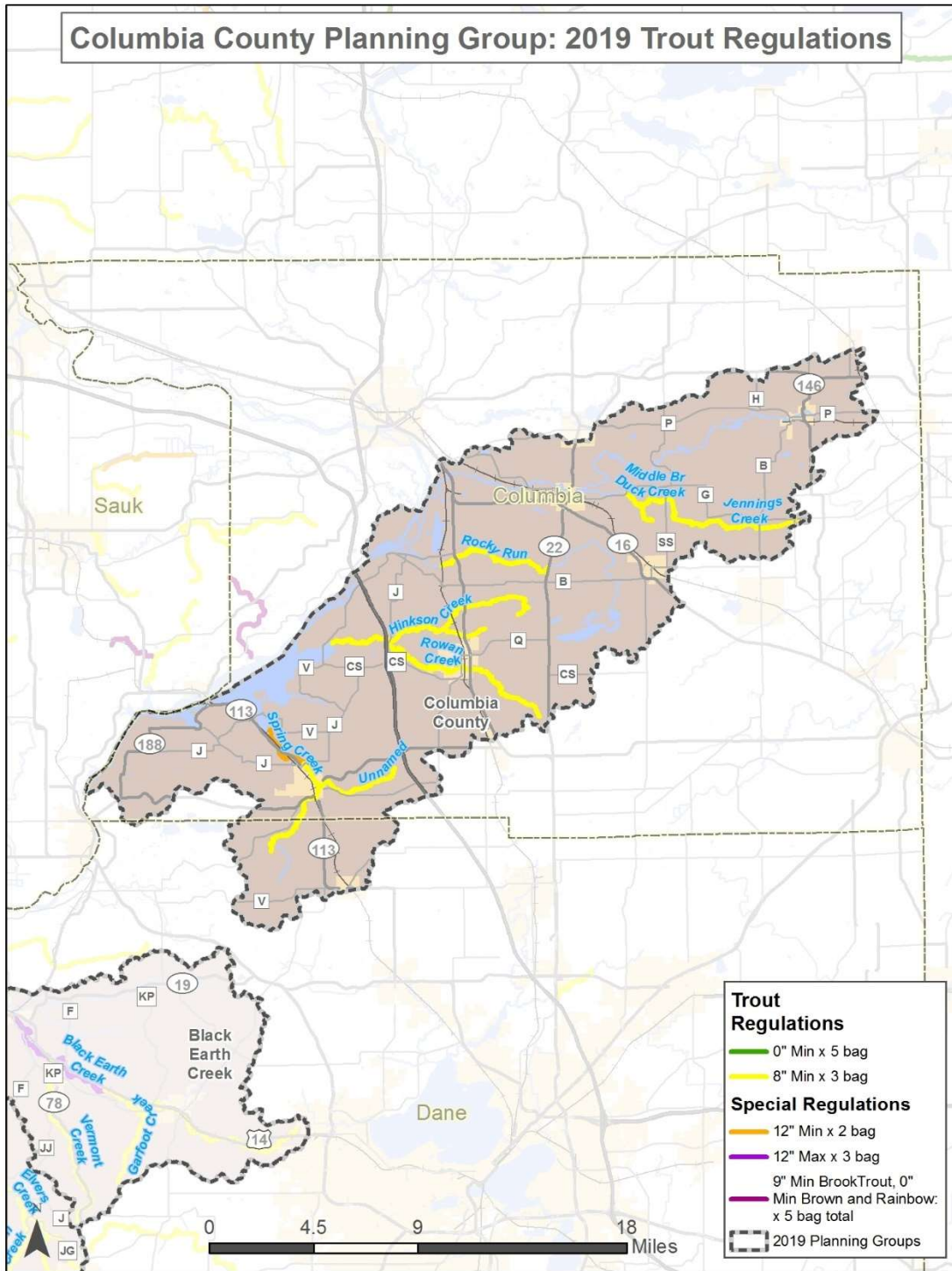


Figure 2. Current trout fishing regulations for classified trout streams in the central Columbia County stream management group.

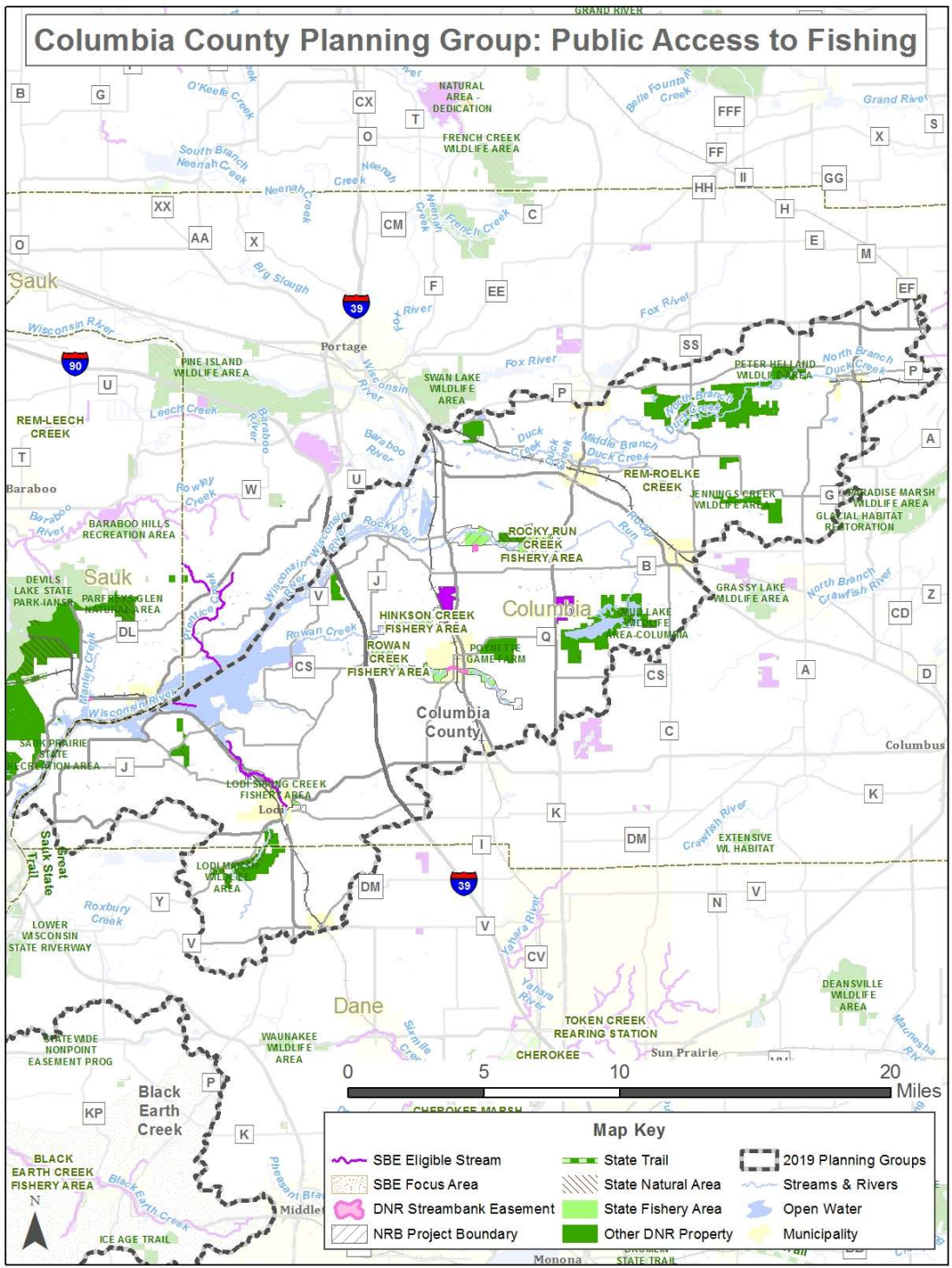


Figure 3. Public land access within the central Columbia County stream management group.

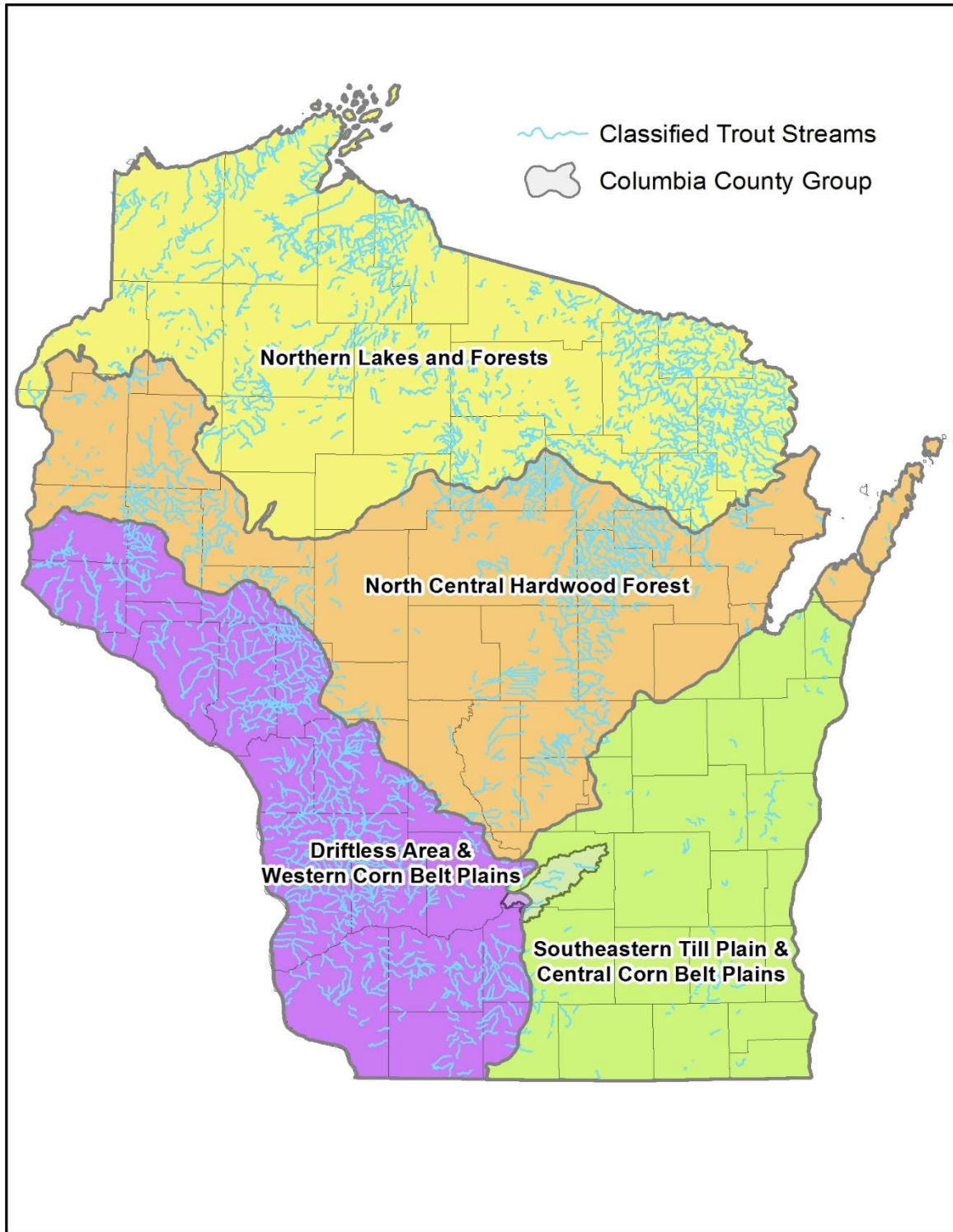


Figure 4. Level III Ecoregions of Wisconsin. The central Columbia County stream management group is located in the Southeastern Till Plains Ecoregion.

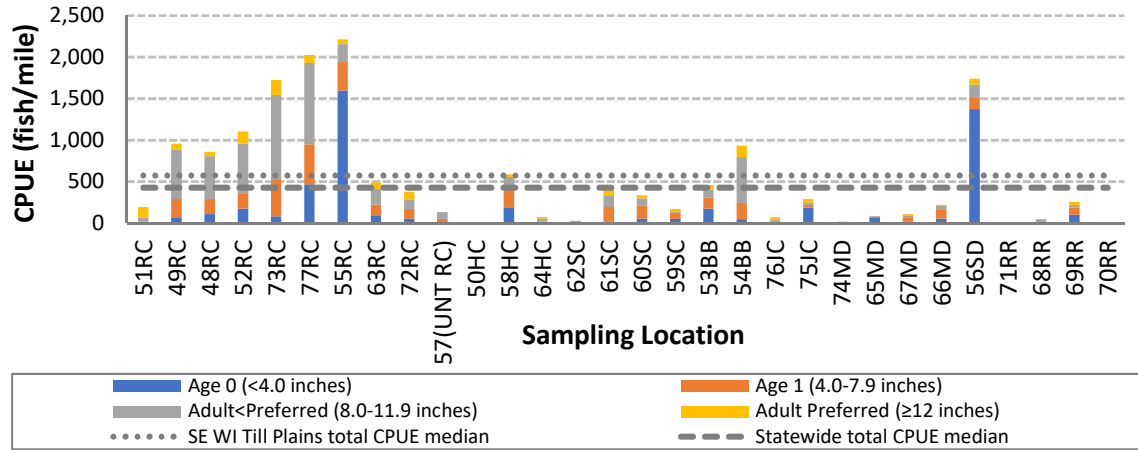


Figure 5. Brown Trout catch-per-unit effort (CPUE) for all sampling locations in the central Columbia County stream management group in 2019.

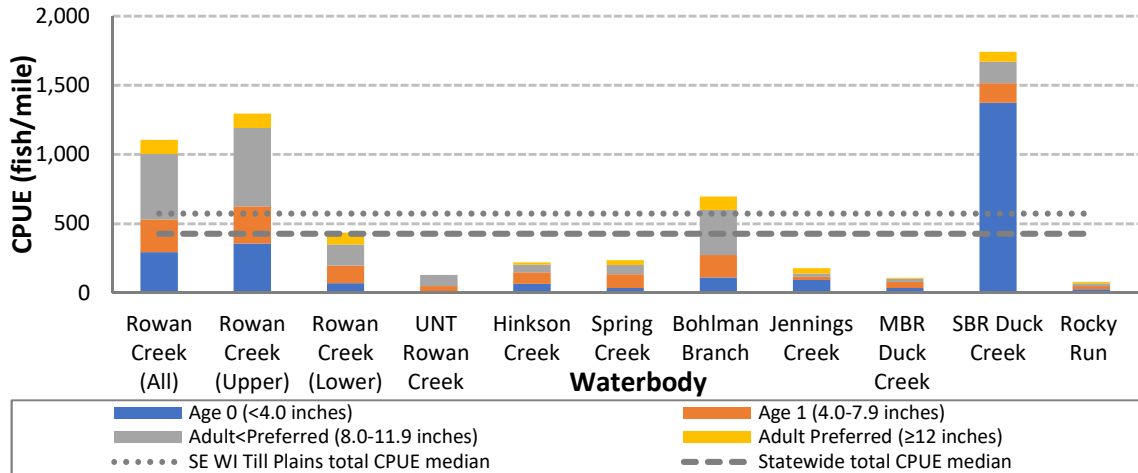


Figure 6. Mean Brown Trout catch-per-unit effort (CPUE) by stream or stream segment in the central Columbia County stream management group in 2019.

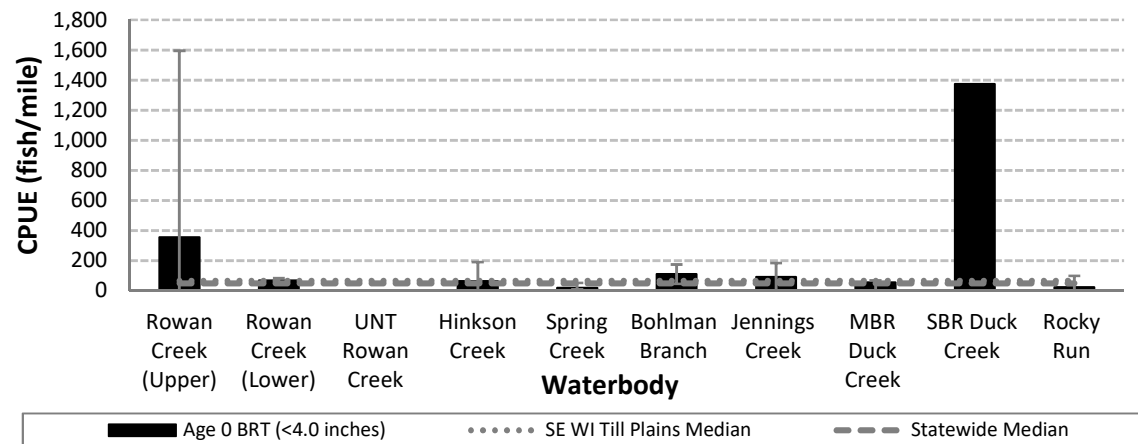


Figure 7. Mean age 0 Brown Trout catch-per-unit effort (CPUE) by stream or stream segment in the central Columbia County stream management group in 2019. Error bars represent the range of CPUE values observed for each stream or stream segment.

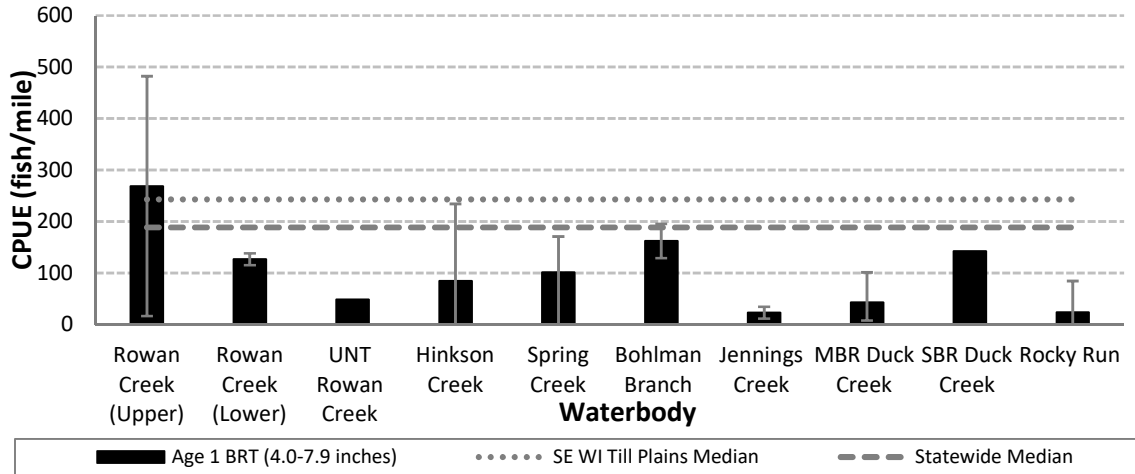


Figure 8. Mean age 1 Brown Trout catch-per-unit effort (CPUE) in the central Columbia County stream management group in 2019. Error bars represent the range of CPUE values observed for each stream or stream segment.

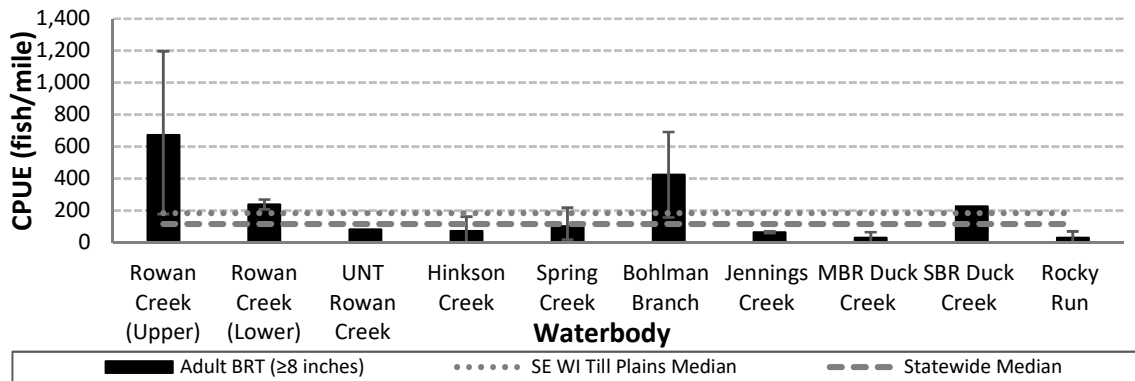


Figure 9. Mean adult Brown Trout catch-per-unit effort (CPUE) in the central Columbia County stream management group in 2019. Error bars represent the range of CPUE values observed for each stream or stream segment.

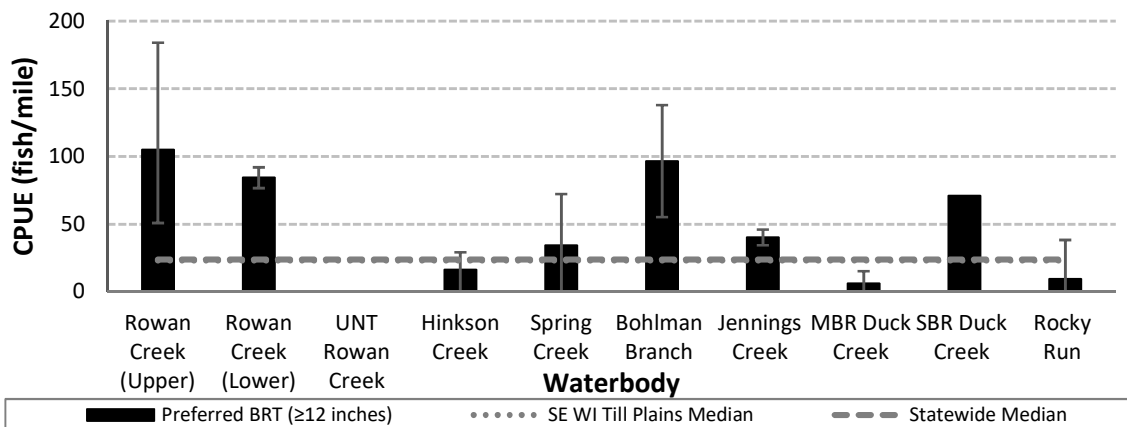


Figure 10. Mean preferred-length Brown Trout catch-per-unit effort (CPUE) in the central Columbia County stream management group in 2019. Error bars represent the range of CPUE values observed for each stream or stream segment.

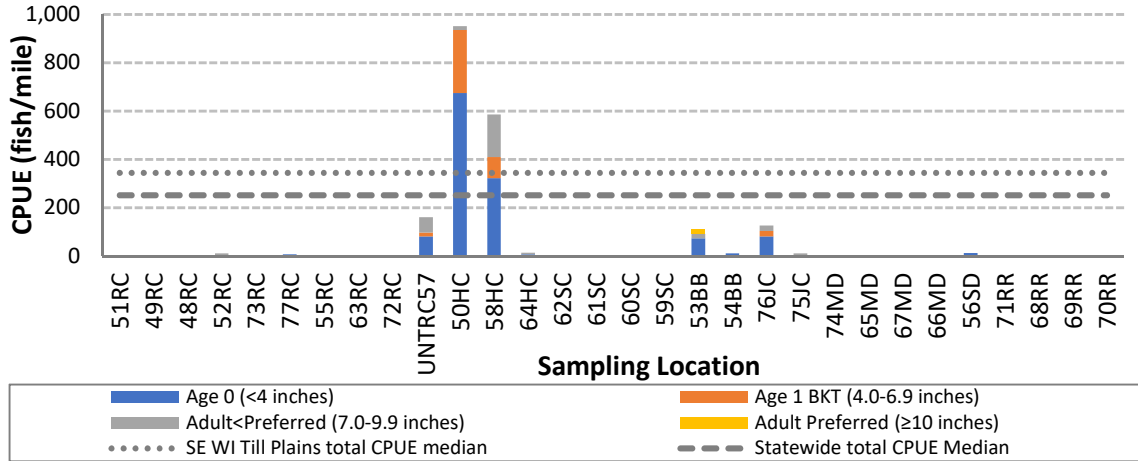


Figure 11. Brook Trout catch-per-unit effort (CPUE) for all sampling locations in the central Columbia County stream management group in 2019.

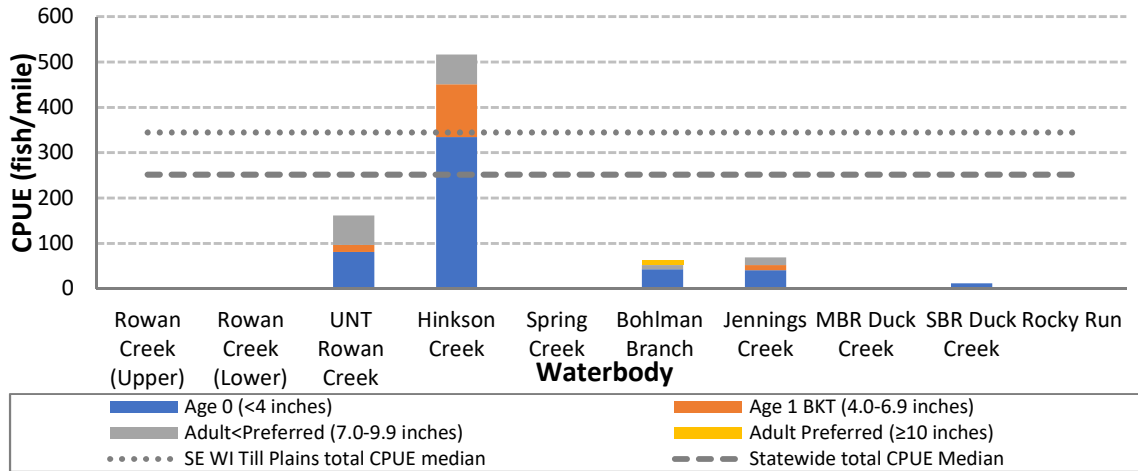


Figure 12. Mean Brook Trout catch-per-unit effort (CPUE) by stream or stream segment in the central Columbia County stream management group in 2019.

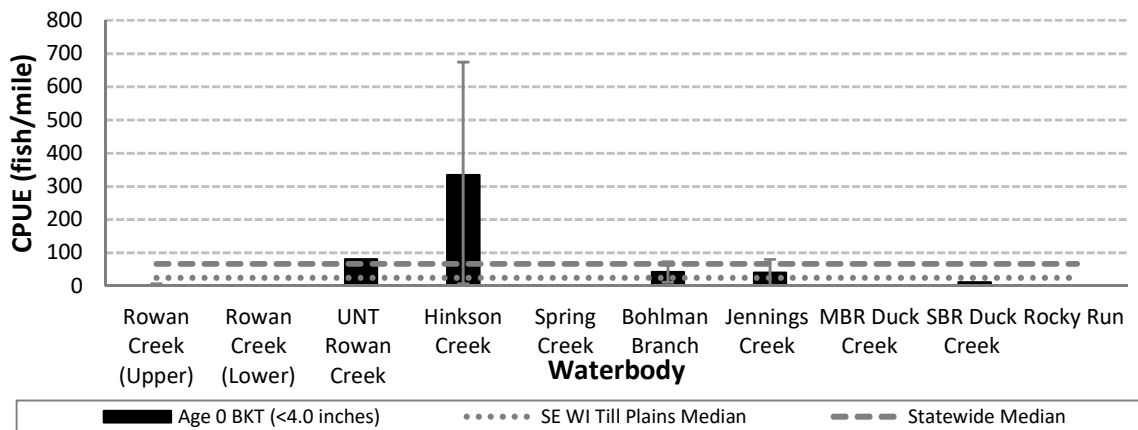


Figure 13. Mean age 0 Brook Trout catch-per-unit effort (CPUE) by stream or stream segment in the central Columbia County stream management group in 2019. Error bars represent the range of CPUE values observed for each stream or stream segment.

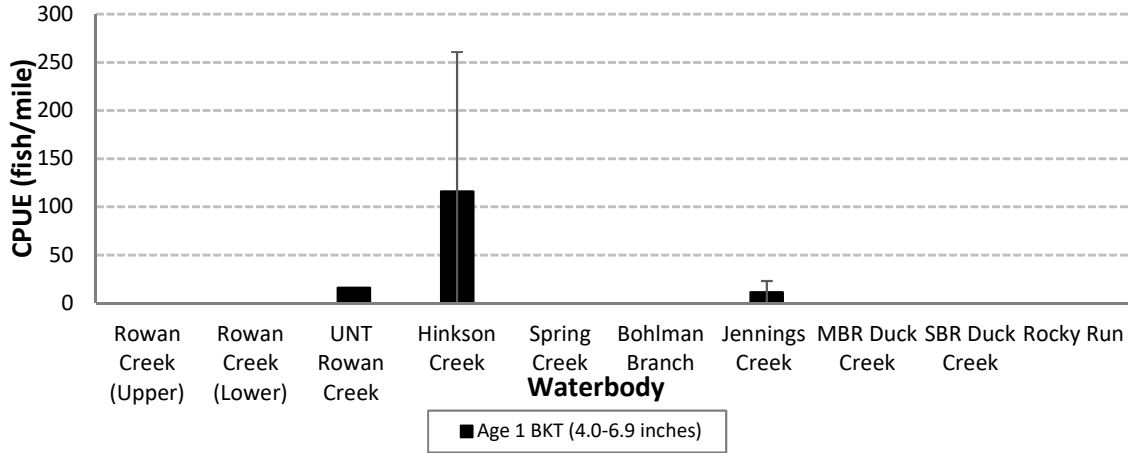


Figure 14. Mean age 1 Brook Trout catch-per-unit effort (CPUE) by stream or stream segment in the central Columbia County stream management group in 2019. Error bars represent the range of CPUE values observed for each stream or stream segment.

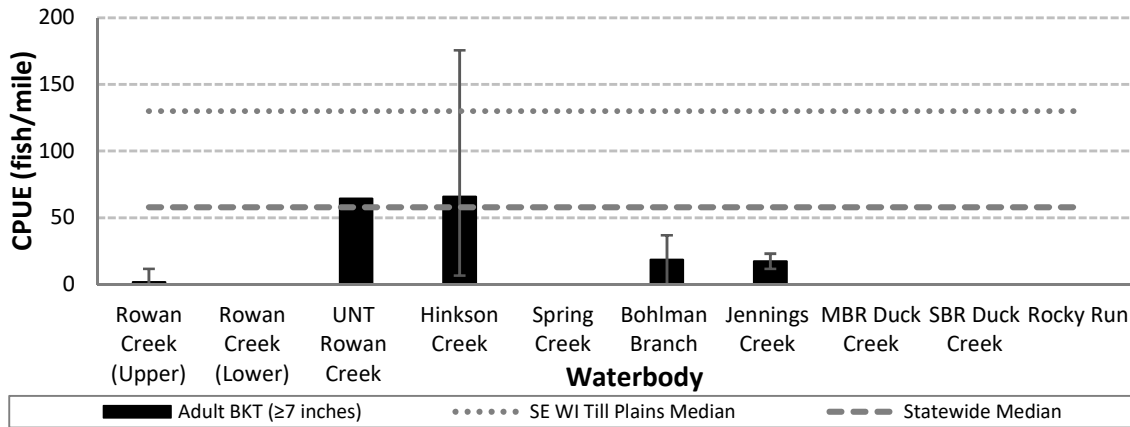


Figure 15. Mean adult Brook Trout catch-per-unit effort (CPUE) by stream or stream segment in the central Columbia County stream management group in 2019. Error bars represent the range of CPUE values observed for each stream or stream segment.

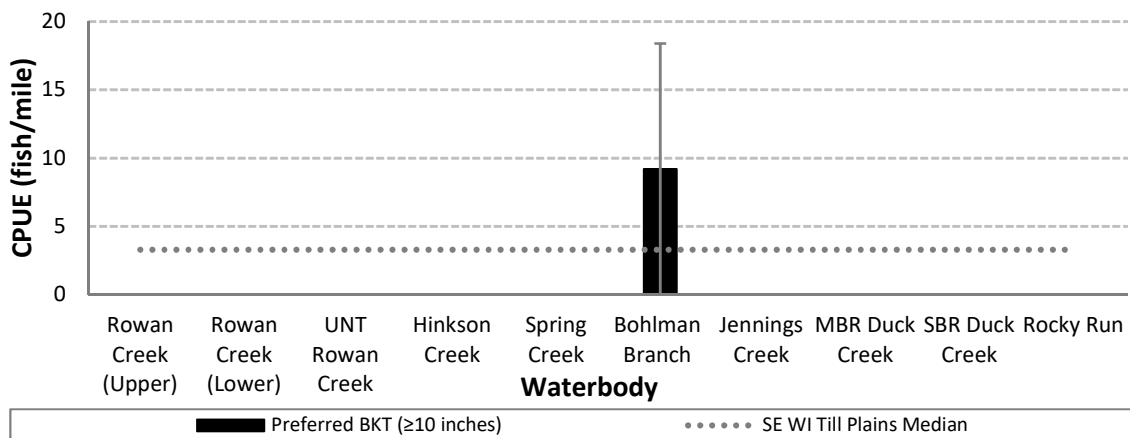


Figure 16. Mean preferred-length Brook Trout catch-per-unit effort (CPUE) by stream or stream segment in the central Columbia County stream management group in 2019. Error bars represent the range of CPUE values observed for each stream or stream segment. The statewide median CPUE for preferred-length Brook Trout is zero.

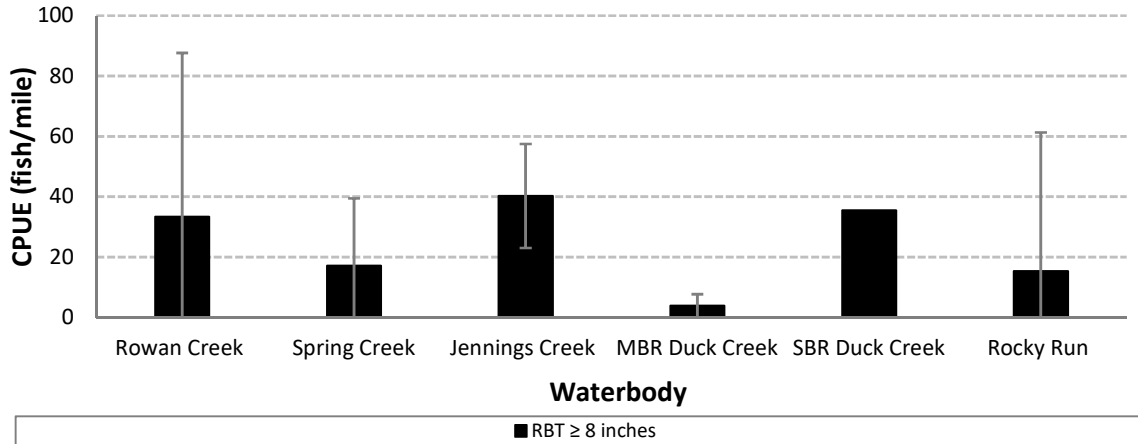


Figure 17. Mean Rainbow Trout catch-per-unit effort of legally harvestable fish (≥ 8 inches) in the central Columbia County stream management group in 2019. Error bars represent the range of CPUE values observed for each stream.

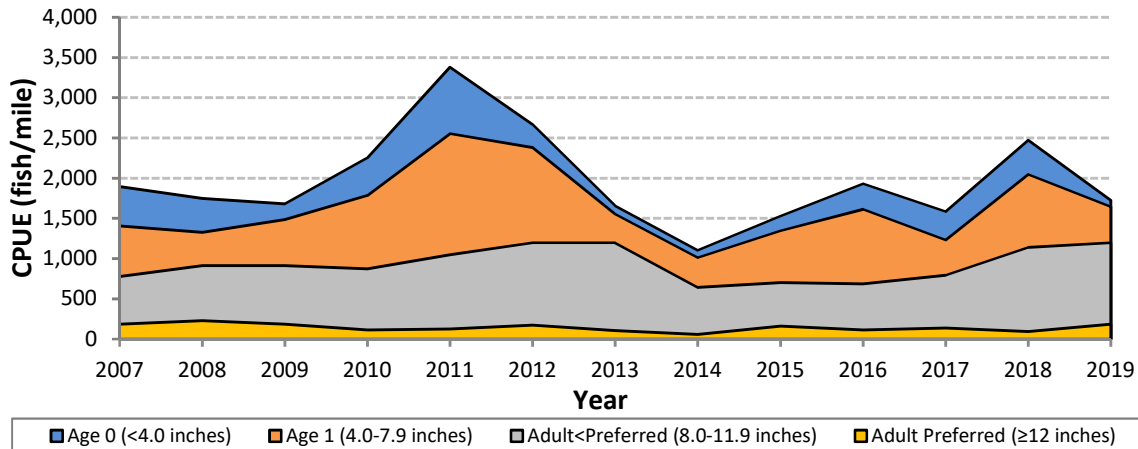


Figure 18. Brown Trout CPUE for the upper Rowan Creek trend monitoring station (site 73), 2007-2019. The black line at the top of the blue shaded region represents the total Brown Trout catch rate.

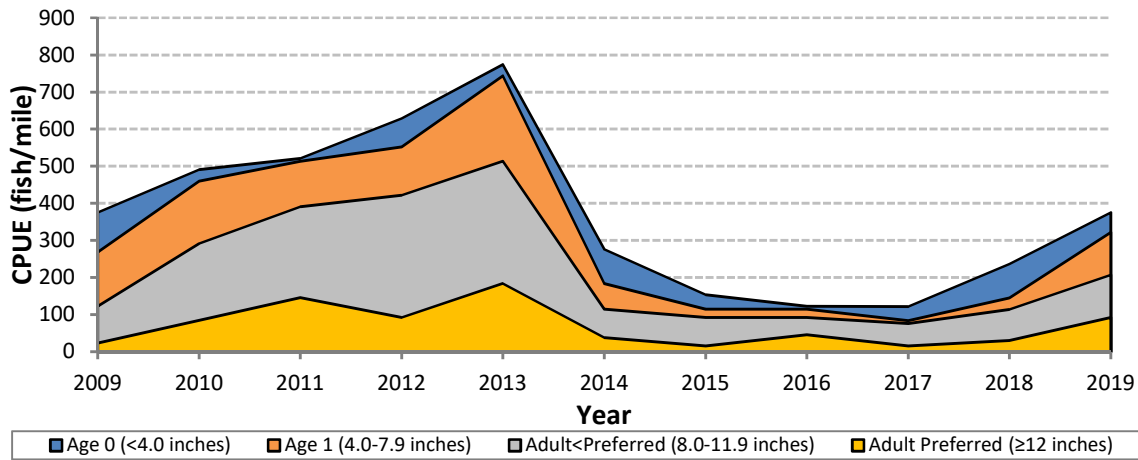


Figure 19. Brown Trout CPUE for the lower Rowan Creek trend monitoring station (site 72), 2009-2019. The black line at the top of the blue shaded region represents the total Brown Trout catch rate.

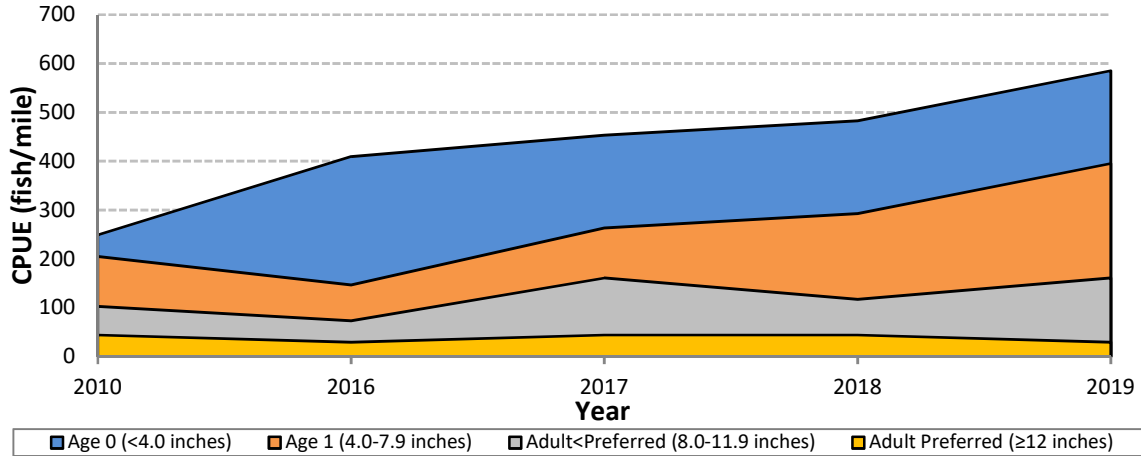


Figure 20. Brown Trout CPUE for the Hinkson Creek trend monitoring station (site 58), 2010-2019. The black line at the top of the blue shaded region represents the total Brown Trout catch rate.

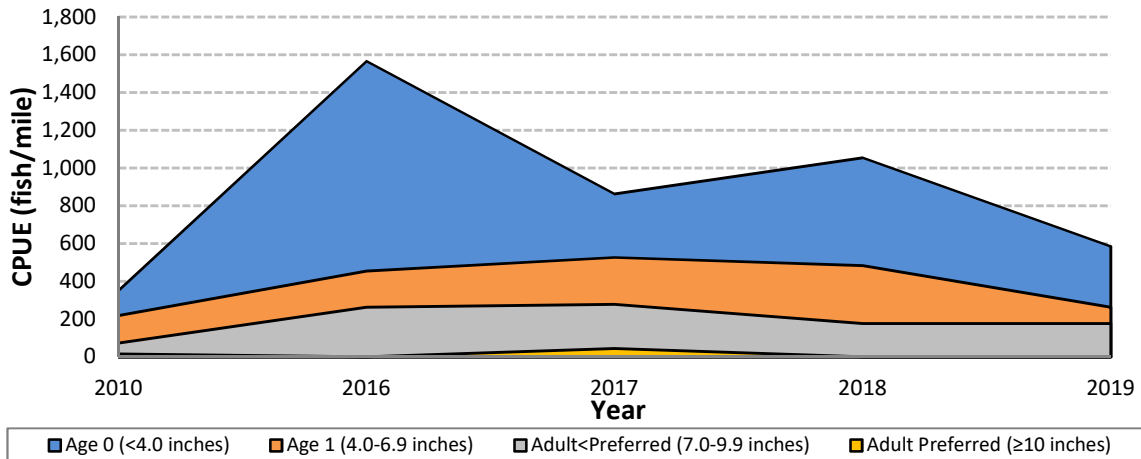


Figure 21. Brook Trout CPUE for the Hinkson Creek trend monitoring station (site 58), 2010-2019. The black line at the top of the blue shaded region represents the total Brook Trout catch rate.

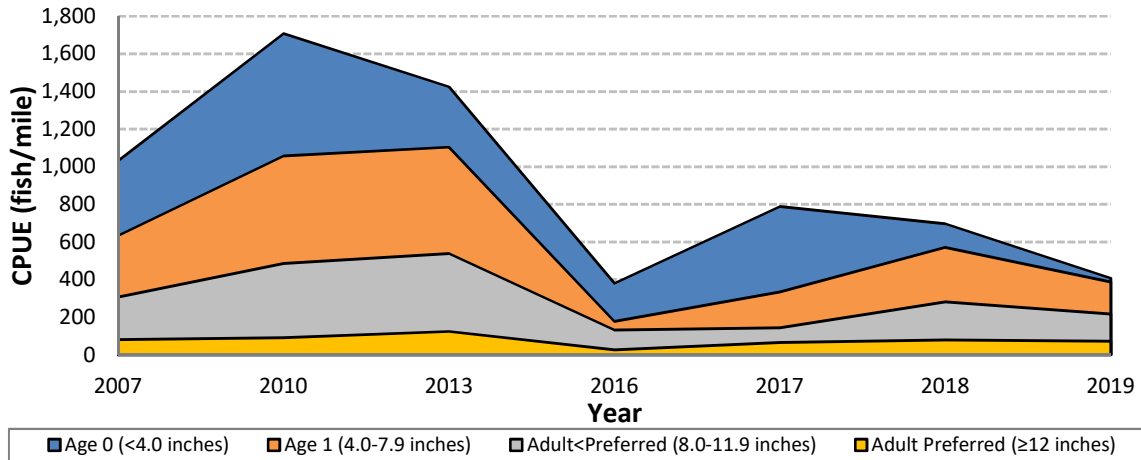


Figure 22. Brown Trout CPUE for the Spring Creek trend monitoring station (site 61), 2007-2019. The black line at the top of the blue shaded region represents the total Brown Trout catch rate.

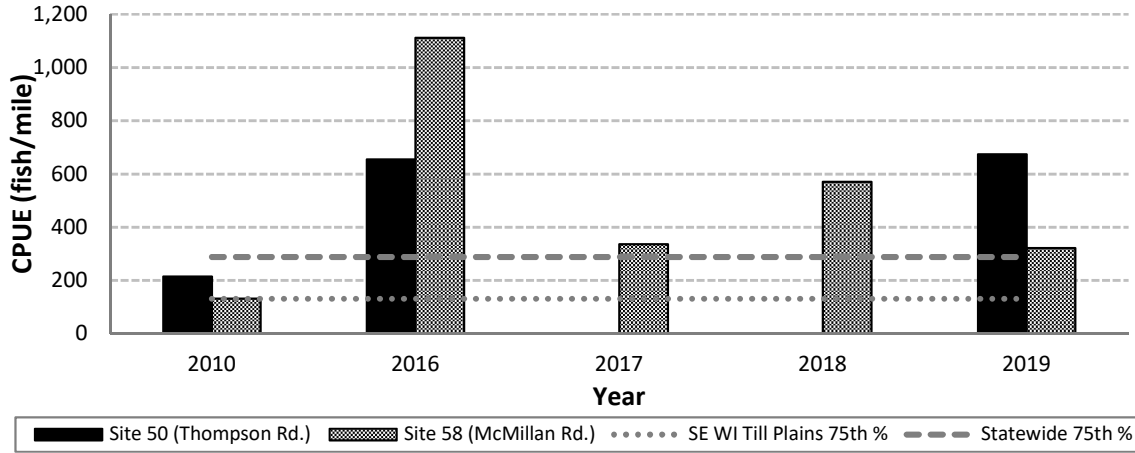


Figure 23. Age 0 Brook Trout CPUE for Hinkson Creek sites 50 and 58 from trend and rotational stream surveys in 2010 and 2016-2019.

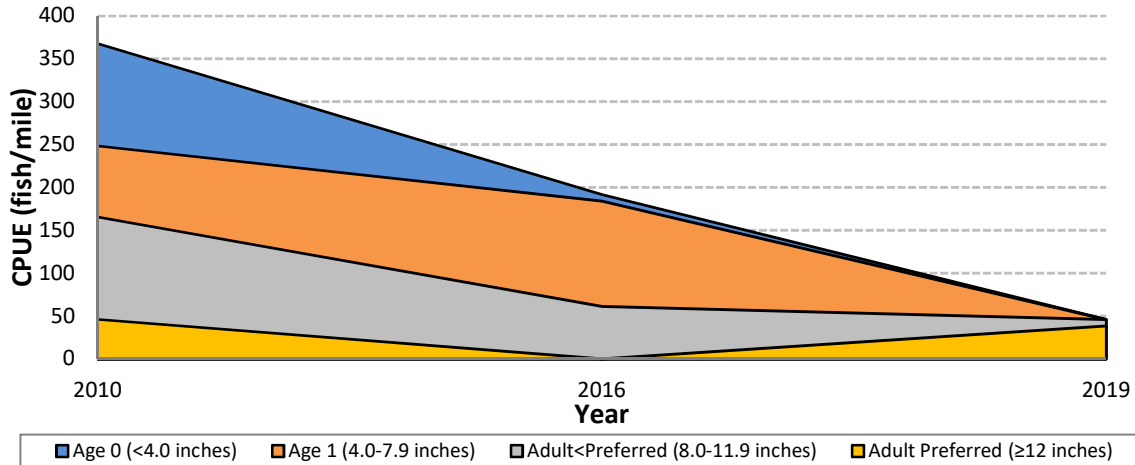


Figure 24. Brown Trout CPUE for Rocky Run rotational surveys at site 68, 2010-2019. The black line at the top of the blue shaded region represents the total Brown Trout catch rate.

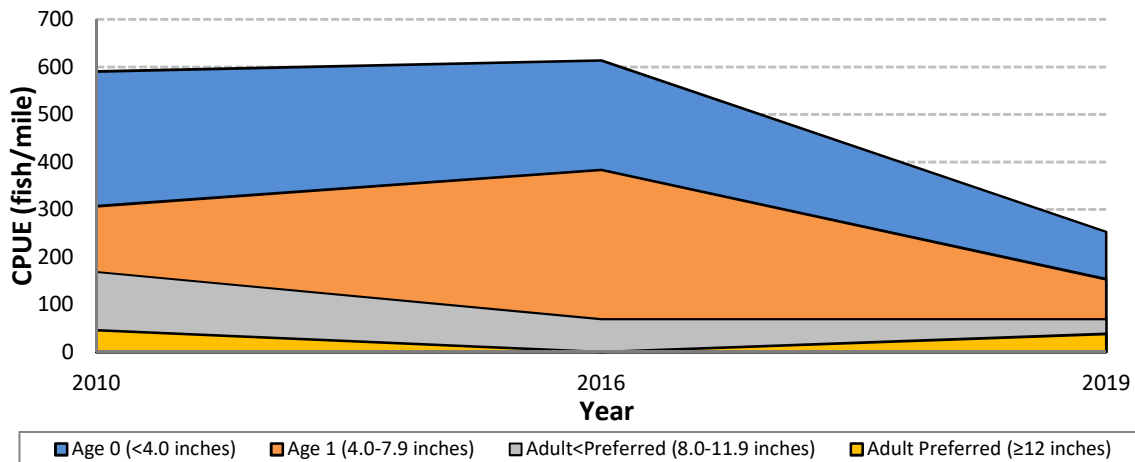


Figure 25. Brown Trout CPUE for Rocky Run rotational surveys at site 69, 2010-2019. The black line at the top of the blue shaded region represents the total Brown Trout catch rate.

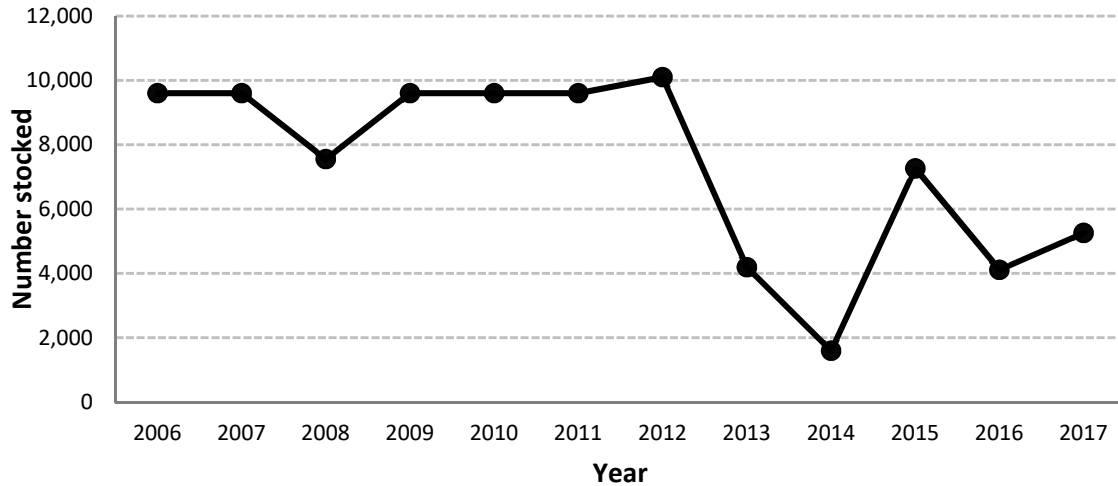


Figure 26. Numbers of small fingerling Brown Trout stocked in Rocky Run Creek, Columbia County, Wisconsin 2006-2017.

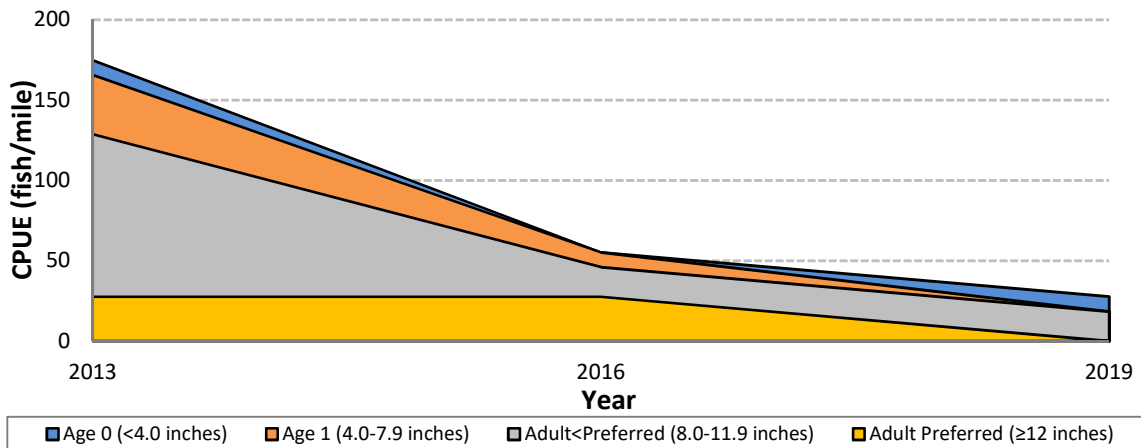


Figure 27. Brown Trout CPUE for Spring Creek rotational surveys at site 62, 2013-2019. The black line at the top of the blue shaded region represents the total Brown Trout catch rate.

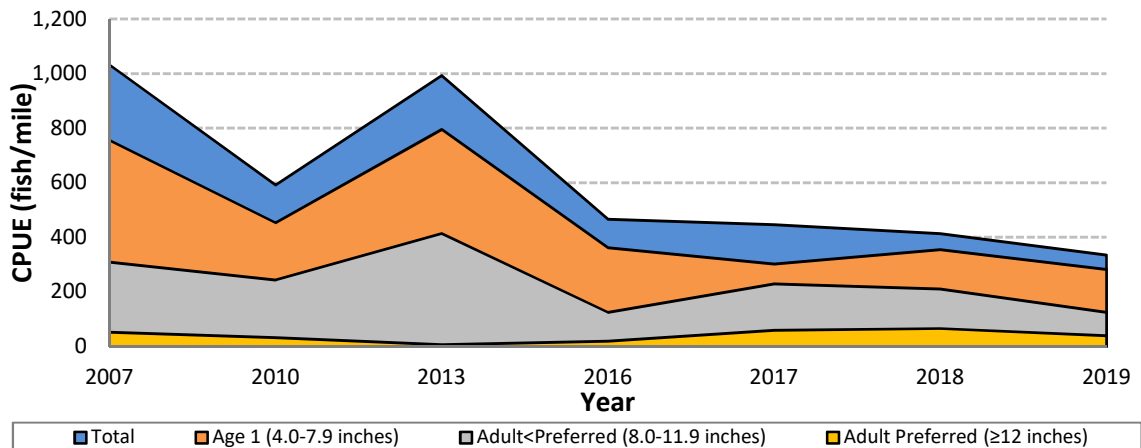


Figure 28. Brown Trout CPUE for Spring Creek rotational surveys at site 60, 2007-2019. The black line at the top of the blue shaded region represents the total Brown Trout catch rate.

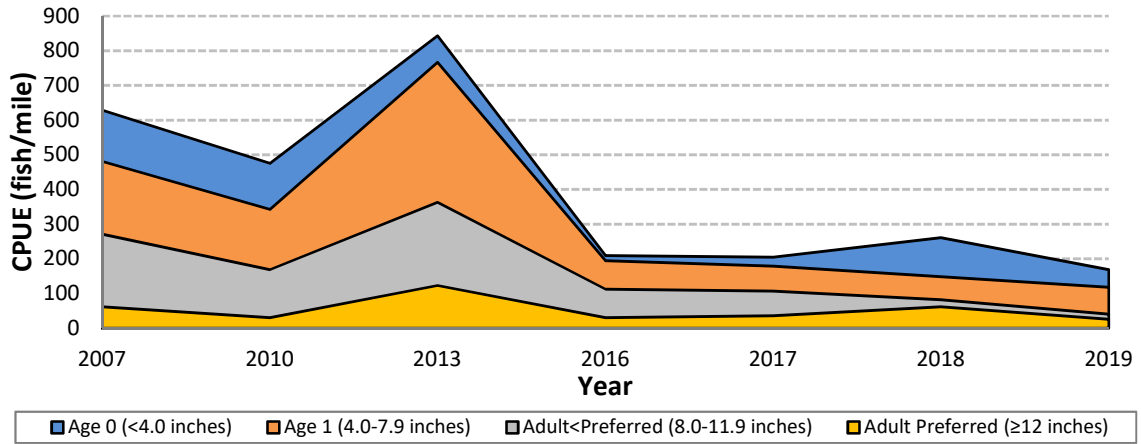


Figure 29. Brown Trout CPUE for Spring Creek rotational surveys at site 59, 2007-2019. The black line at the top of the blue shaded region represents the total Brown Trout catch rate.