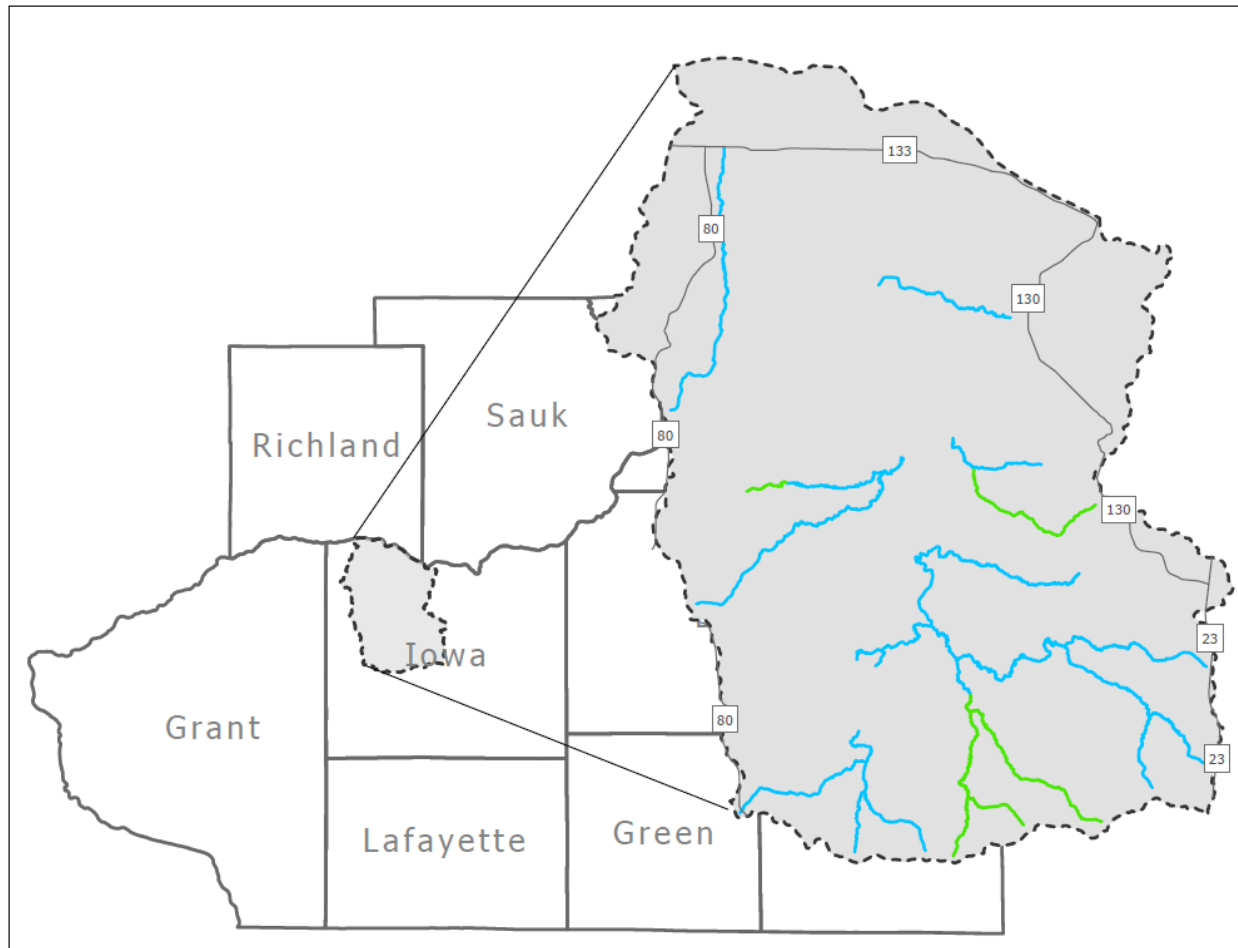


**WISCONSIN DEPARTMENT OF NATURAL RESOURCES**  
**Trout Management and Status Report Of The Otter and**  
**Morrey Creek Watersheds**

Iowa County, Wisconsin 2022



**Justin Haglund**  
DNR Fisheries Biologist – Senior  
Dodgeville, Wisconsin  
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## **EXECUTIVE SUMMARY**

Wisconsin Department of Natural Resources (DNR) staff conducted stream electrofishing surveys along Otter Creek and other larger coldwater tributaries in the summer of 2022, including Cave Hollow, Lee, Martin, Dickinson, Flint, Smokey Hollow, Pompey Pillar, Spring Valley and Morrey creeks, as well as other smaller streams and a few unnamed tributaries.

Stocking and regulations are two management tools used by DNR staff. Over the last five years, Cave Hollow, Dickinson, Flint, Morrey, Otter, Smokey Hollow and Pompey Pillar creeks have been stocked. Within the Otter Creek watershed, three regulations are used to manage the trout populations. The first is the Iowa County base regulation of three trout over 8 inches. The other two special regulations include catch and release only and five trout in total, but brook trout shall be immediately released, and brown and rainbow trout have no minimum length.

The purpose of these surveys is to understand the recruitment and reproduction of our fisheries. For the evaluation, all fish stocking within the watershed was suspended the year prior to the surveys. This allowed us to determine how much natural reproduction and recruitment were occurring. Natural reproduction refers to the presence of age-0 fish. Natural recruitment is defined by juvenile fish surviving to age-1. Based on the results, we can determine how productive these fisheries are as well as assess adult abundance in relation to the current management.

The Otter Creek watershed offers a diversity of trout resources, with brook, brown and rainbow trout surveyed. Streams vary from small to large, with mixed trout species existing in a majority of the streams. Habitat is also very diverse, with small headwater streams that provide excellent reproductive potential to large portions of deep river, with shifting sand substrates that have the potential to hold trophy fish but lack natural reproduction. Brook trout were present in highest abundance in Cave Hollow, Unnamed Tributary (UNT) to Smokey Hollow and UNT to Spring Valley Creek. Brown trout were highest in abundance in Smokey Hollow, Harker, Pompey Pillar and Otter creeks. Only a few stocked rainbow trout were captured in Otter Creek. Overall, brook and brown trout populations dominate within these watersheds; however, many of these need stocking to maintain fishable populations.

Management goals will focus on expanding streambank easement authority and mileage within the Otter Creek watershed to increase angler access on a number of streams. Fisheries Management will also focus on the classification or reclassification of a few streams, including Pompey Pillar, Smokey Hollow, UNT to Smokey Hollow, Penn Hollow and Pengelley creeks. For the most part, the regulations are sufficient, although to expand opportunities for anglers, a proposal to allow harvest on Otter Creek below Blackhawk Lake will be put forth, switching from catch and release to the county base regulation of three trout over 8 inches. Pompey Pillar should also

become the focus of a habitat restoration project to reduce erosion and sedimentation, as well as improve instream habitat.

## **WATERSHED LOCATION**

Otter Creek Watershed, Iowa County

## **PURPOSE OF SURVEY**

- Assess natural reproduction and recruitment
- Assess trout stream classification
- Assess current status and abundance of trout populations
- Evaluate regulations

## **DATES OF FIELDWORK**

June 22 – July 29, 2022

## **SPECIES SAMPLED**

- American brook lamprey
- Brook stickleback
- Brook trout
- Brown trout
- Burbot
- Common shiner
- Creek chub
- Emerald shiner
- Fantail darter
- Fathead minnow
- Golden redhorse
- Green sunfish
- Hornyhead chub
- Johnny darter
- Mottled sculpin
- Northern hog sucker
- Rainbow trout
- Smallmouth bass
- Southern redbelly dace
- Western blacknose dace
- White sucker

## INTRODUCTION

The Otter Creek watershed is located within the lower Wisconsin River subbasin. This area lies within the Driftless Area of Wisconsin and is characterized by steep bluffs and karst topography. These streams are typically higher in gradient, have faster flows and are embedded in complex floodplains (DNR 2013). They also include streams where groundwater recharge is high and spring complexes are abundant, leading to excellent coldwater resources. This watershed contains Class 1 and Class 2 trout waters that are small-to-large sized and have a range of fair to excellent habitat, with fishable populations of both brook and brown trout.

Cave Hollow is a Class 2 spring-fed stream in the headwaters of the Otter Creek watershed. This stream is small and shallow with limited instream habitat (Ripp et al. 2002). Pasturing and agriculture are heavy along the banks of Cave Hollow and contribute sediment to many portions of this stream. A major barrier to fish movement is also present at the upper Cave Hollow road crossing.

Lee Creek is a Class 1 tributary to Harker Creek. This portion of the watershed was historically dominated by agriculture but has since been restored to resemble native landscapes (Ripp et al. 2002). This is likely a major contributor and the reason Lee and Harker creeks have been able to maintain Class 1 status through recent years.

Harker Creek is a spring-fed Class 1 and Class 2 tributary. This stream is also designated as an exceptional resource water (ERW). This stream contains mostly wooded corridors and wetlands throughout its upper reaches, although some parcels have been restored to a natural oak savanna landscape with DNR streambank easements along the middle reaches. The lower reaches contain lands that are pastured for agricultural purposes. As a result, the banks are eroded and contribute to the nonpoint source issues. It's thought brook trout in Harker Creek contain genetics native to the lower Wisconsin River basin, although more research is needed for a final determination.

Pengelly Creek is a Class 2 trout water located at the headwaters of Flint Creek. This stream flows through wooded corridors until it reaches Flint Creek. Not much is known about the water quality or fishery in Pengelly Creek; therefore, it will be evaluated through this watershed assessment.

Norwegian Hollow Creek is a Class 2 spring-fed tributary to Otter Creek. This stream flows through lands with mixed uses, including row cropping at the upper reaches with woodlands and grazing through the mid-reaches. As a result, Norwegian Hollow Creek has been historically impacted by nonpoint source pollution (Ripp et al. 2002).

Dickenson Creek is a Class 2 tributary to the middle reaches of Otter Creek. This stream is considered small, with sandy substrate and springs throughout. Dickinson Creek has experienced nonpoint source pollution issues in the past but, with recent

land use practices improving, may have the potential to hold trout. One small streambank easement exists along the middle section of Dickinson Creek.

Flint Creek is a Class 2 spring-fed tributary to Otter Creek. This stream is almost entirely surrounded by woodlands in the upper reaches; however, this shifts to an agriculturally dominated landscape in the lower stretch where row cropping and grazing become abundant. This has historically been problematic for Flint Creek and has been pointed out as a priority for nonpoint source pollution (Ripp et al. 2002). No public access currently exists on Flint Creek.

Pompey Pillar Creek contains both Class 1 and Class 2 trout waters. In the past, this stream has contained an abundant population of brook trout, with genetics thought to resemble fish native to the lower Wisconsin River drainage. This stream is also surrounded by forested corridors in the upper reaches and transitions to mainly grazed lands below, with some row cropping before it reaches Otter Creek. This stream is spring-fed and contains good habitat in the upper reaches, although beavers have been problematic in recent times. Habitat continues to be a limiting factor throughout Pompey Pillar Creek and should be prioritized for future restoration projects.

Spring Valley Creek is a small tributary to middle Otter Creek. This stream has historically been managed as a Class 2 trout stream, although land use impacts have become an issue. The stream has experienced problems with nonpoint source pollution and hydrologic modification and has since contained a limited fishery overall (Ripp et al. 2002).

Penn Hollow Creek is a Class 2 tributary to lower Otter Creek. This stream flows through row-cropped lands along most of its length, although some forested corridors are present in the upper reaches. As a result, this stream has severely eroded banks, and the streambed consists of silt and clay in many locations. The current status of trout in this stream is unknown.

Otter Creek is the main stream in the watershed and a tributary to the lower Wisconsin River. Blackhawk Lake is a major impoundment located on the upper reaches of Otter Creek, which impacts stream temperature and dissolved oxygen levels immediately below. Overall, Otter Creek contains nearly 8 miles of Class 2 trout water below Blackhawk Lake, with brook, brown and rainbow trout present, most of which are stocked by the DNR. The majority of Otter Creek is surrounded by row crops and grazed lands, although above Blackhawk Lake, it's surrounded by forested lands, some owned by the state. Stream habitat is good throughout upper Otter Creek and its tributaries, with most of the stream surrounded by woodlands that are privately owned, making this an excellent candidate for brook trout management. Public access is available with both state-owned lands and DNR streambank easements along the classified reaches, although expanding public access throughout the upper watershed is a priority.

Morrey Creek is a Class 2 trout fishery to the lower Wisconsin River. This stream has been historically classified as a warm water seepage stream, although it recently has supported a brown trout fishery. The surrounding landscape is heavily forested, although many parcels along lower Morrey Creek contain row crops and grazed pastures with little buffers. Currently, no public access is present along Morrey Creek.

## **CURRENT STATUS**

### **STOCKING**

Stocking in the Otter Creek watershed has been extensive over the recent past. Cave Hollow, Dickenson, Flint, Morrey, Otter, Pompey Pillar and Smokey Hollow creeks have all been stocked by the DNR with mostly fingerlings to supplement the natural recruitment and are considered “put-and-grow”. There is regular stocking of surplus adult brood stock trout below Blackhawk Lake in Otter Creek. Stream, species, size and number stocked are located in Table 3.

### **REGULATIONS**

The classified trout waters in the Otter Creek watershed are managed under three different regulations (Figure 2). The majority of streams are managed under the Iowa County base regulation of three trout over 8 inches. Two special regulations are also currently implemented. One special regulation consists of catch and release only, which typically helps manage low-density populations or protect stream reaches where spawning occurs. The other special regulation allowing the harvest of five trout in total, where brook trout must be immediately released and brown and rainbow trout have no minimum length, is used to protect brook trout but allows the harvest of brown and rainbow trout to reduce competition between species.

### **HABITAT IMPROVEMENT**

Habitat restoration projects have been conducted along easements and state lands within this watershed. Streams with habitat enhancements include Otter, Harker and Pompey Pillar creeks. Otter Creek restorations upstream of Blackhawk Lake included bank stabilization and vortex weirs in 1995. Work downstream of Blackhawk Lake included bank stabilization and brushing activities in 1988. Harker Creek received bank stabilization and vortex weir improvements in 1994 and 2005. Improvements were also conducted on state lands along Pompey Pillar Creek. Bank stabilization, brushing and riprap were installed in 1992, with further brushing activities in 2005. A tree planting project was also completed on this state property in 2016.

### **PUBLIC ACCESS**

Public access throughout these watersheds is possible due to DNR-owned fee title properties and streambank easements. These lands contain over 8.5 miles of publicly accessible trout water. Fishing easements and state-owned lands allow for public

access along the stream corridor for a variety of uses, including hunting (fee title only), fishing, hiking, wildlife observation and cross-country skiing (Figure 3).

## **LAND USE**

The Otter and Morrey creek watersheds are located entirely in Iowa County. The Otter Creek watershed covers approximately 113 square miles (Stroud 2021). Land use practices within the watershed consist of 27% pasture/hay, 19% cultivated crops, 44% forested lands and 10% other (Table 1). The Morrey Creek watershed covers approximately 34 square miles (Stroud 2021). Land use practices within the watershed consist of 17% pasture/hay, 23% cultivated crops, 54% forested lands and 6% other (Table 1). In total, these watersheds contain over 66 miles of classified trout waters.

## **WATERSHED SCALE ASSESSMENT**

Understanding reproduction and recruitment is critical to managing trout populations. In Class 1 streams, as defined in NR 1.02, there is no need for stocking because there is adequate natural reproduction to maintain the fishery. The DNR stocks fingerling trout in streams where there is insufficient natural reproduction and recruitment to maintain a fishable population but adequate survival of trout to adulthood. These are designated as Class 2 streams, and the stocking is referred to as “put and grow.” Often, based on the life history strategy of trout, reproduction occurs in stream segments that differ from juvenile and adult habitat types. Natural reproduction is the presence of age-0 fish, which may be more variable in their catchability to electrofishing and may occur upstream in nursery habitats. Natural recruitment is defined by juvenile fish surviving to age-1. Documenting the lack of natural reproduction (YOY trout) does not necessarily mean there is a lack of natural recruitment. Additionally, large fingerling brown trout were accidentally stocked into Otter Creek in the fall of 2021. Therefore, rates of recruitment to age-1 in Otter Creek in 2022 may be inflated as a result.

## **METHODS**

Summer stream sampling on trend (sampled annually), rotation (sampled on a rotation) and potential (thought to have trout but previously unverified) sites spanned from June 22 – July 29, 2022 (Figure 1; Table 2). All 38 stream sites were surveyed with either a backpack electrofishing unit or tow behind stream barge. Backpack electrofishing units are used on small streams that are typically shallow in nature. Tow behind stream shockers are larger units in which the generator is mounted in a barge that is towed by one individual. These units are used in larger waters that are also wadable.

The number of sites varies depending on the stream segment length. One site is sampled on segments less than 1.5 miles, two sites on segments from 1.5-3 miles and one site per 3 miles on segments greater than 3 miles. The length of the stream site



sampled is 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 is sampled. All fish are collected on trend sites where gamefish, exotic species and threatened/endangered species are measured to total length. Only the first 200 fish are measured if large numbers of gamefish are encountered. Young-of-year are counted and a subsample of 50 fish are measured. All other fish are counted to conduct an index of biotic integrity (IBI). Other specifics can be found in the 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 handheld flow meter. Temperature, dissolved oxygen and specific conductivity were also measured using a handheld YSI Pro 2030 meter.

## **POPULATION ASSESSMENT**

Once gamefish and other fish species have been collected, the number of fish per mile was computed (CPUE – catch per unit effort, in this case miles) based on the number of fish collected and the length of the stream station sampled. This allowed for the comparison of catch rates both within and among stream sites. Total CPUE, as well as size specific-catch rates, were calculated for age-0 fish (young-of-year, <4.0 inches), yearlings (4.0-7.9 inches for brown trout and 4.0-6.9 inches for brook trout) and adults (≥8 inches for brown trout and ≥7 inches for brook trout). Median values for size-specific trout CPUE metrics presented in several of the tables and figures in this paper were generated from summaries of DNR fishery surveys of Class 1 trout streams in the Driftless Area as well as statewide from 2012-2021, where at least one trout was collected in the survey (surveys where the catch was zero were excluded; Table 3). These regional and statewide summaries were used to compare stream-specific abundance data as low abundance (<35<sup>th</sup> percentile), medium (35<sup>th</sup>-65<sup>th</sup> percentile) and high (>65<sup>th</sup> percentile; Table 3).

## **RESULTS**

In total, 38 stream sites were sampled within the Otter and Morrey creek watersheds (Figure 1; Table 2). Data were compiled both at individual stream sites (Table 6; Table 7) and grouped based on stream segments. For segments that combined multiple stream sites, CPUE was averaged (Figure 4-11). Brook, brown and rainbow trout were found during the assessment in 2022, although only five rainbow trout were surveyed. As a result, the results of the assessment will focus on brook and brown trout.

Reproduction of brown trout was observed in seven of the 16 streams surveyed during the summer of 2022. CPUE of age-0 fish was only considered high in one site on Smokey Hollow Creek, exhibiting 396 age-0 brown trout per mile (Site 27; Figure 4; Table 6). However, between the two sites surveyed, reproduction was only considered moderate. Pompey Pillar was considered moderate based on statewide values but

fell just shy of the 35<sup>th</sup> percentile for Driftless Area standards. Harker, Norwegian Hollow, Dickinson, Flint and Otter creeks all exhibited low abundances of age-0 brown trout. In total, reproduction of brown trout was surprisingly low throughout the watershed (Figure 4; Table 6).

Brook trout reproduction was more widespread yet remained low to moderate in terms of reproductive potential. Of the 16 streams surveyed, nine streams contained age-0 fish. One site on UNT to Smokey Hollow Creek contained an abundance above both statewide and Driftless Area standards, with 176 age-0 fish per mile (Figure 5; Table 7). Two other sites contained a moderate abundance of age-0 fish, Cave Hollow Creek downstream of Cave Hollow Road and Martin Branch, exhibiting 134 and 110 fish per mile, respectively. Lee, Harker, Smokey Hollow, Pompey Pillar, UNT to Spring Valley and Spring Valley creeks all contained age-0 fish in low abundance, with all other streams devoid of reproduction.

Eleven streams within the Otter Creek watershed exhibited brown trout recruitment to age-1. Pompey Pillar Creek had the highest rate of recruitment, with an average of 654 fish per mile captured (Figure 6). Survey crews collected a high abundance at site 29 on Pompey Pillar, with 1,942 age-1 fish per mile (Figure 6; Table 6). Three other sites also exhibited a high abundance of brown trout. Smokey Hollow Creek at site 27, Pompey Pillar Creek at site 28 and Otter Creek at site 6 exhibited 386, 403 and 369 fish per mile, respectively (Figure 6; Table 6). On average, Cave Hollow, Harker, Smokey Hollow and Otter creeks all contained a moderate abundance of age-1 fish based on Driftless Area and statewide standards. Lee, Norwegian Hollow, Dickinson, Flint, UNT to Smokey Hollow and Morrey creeks all contain a low abundance on average, with all other streams lacking age-1 fish (Figure 6).

Recruitment of yearling brook trout was observed in ten streams overall, with the highest abundance located in UNT to Smokey Hollow, with 581 fish per mile captured (Figure 7; Table 7). Cave Hollow Creek, Lee Creek, Harker Creek and Otter Creek all contained a site with an abundance above the statewide median value. Cave Hollow at site 2 contained 134 fish per mile, Lee Creek at site 5 had 151 fish per mile, Harker Creek at site 3 had 80 fish per mile and Otter Creek at site 6 contained 169 fish per mile (Table 7). Martin, Smokey Hollow, Pompey Pillar, UNT to Spring Valley and Spring Valley Creeks all contained a low to moderate abundance, while Pengelly, Norwegian Hollow, Dickinson, Flint and Penn Hollow creeks did not contain any age-1 brook trout (Figure 7).

Overall, 11 streams contained adult brown trout within the Otter Creek watershed. Pompey Pillar, Otter and Smokey Hollow creeks had the highest abundance on average, with 637, 333 and 297 adults per mile, respectively (Figure 8; Table 6). Pompey Pillar Creek at site 29 had the highest abundance, with 1,808 adult brown trout per mile, followed by Otter Creek at site 17, with 824 adults per mile (Table 6). Harker, Flint and Morrey creeks also had at least one site where adult abundance was above both statewide and Driftless Area standards (Figure 8). All other streams where

adult brown trout were found occurred in low-moderate abundance, with Martin, Pengelly, UNT to Spring Valley, Spring Valley and Penn Hollow devoid of adult fish. The majority of streams where adult brown trout were found also contained preferred-size fish (Figure 10). Sites with the highest abundance included Otter Creek at site 17, Harker Creek at site 11 and Pompey Pillar Creek at site 31 with 206, 129 and 118 fish per mile, respectively (Figure 10; Table 6). Cave Hollow, Flint and Smokey Hollow creeks also contained preferred-size fish in moderate abundance, with Morrey Creek exhibiting a low abundance on average.

Eleven streams also contained adult brook trout. Cave Hollow, UNT to Smokey Hollow and UNT to Spring Valley creeks contained an average abundance above both statewide and Driftless Area median values (Figure 9). Sites with the highest abundance included Cave Hollow at site 4, UNT to Smokey Hollow at site 22, UNT to Spring Valley at site 26 and Otter Creek at site 6 with 300, 270, 200 and 123 fish per mile, respectively. Martin, Lee, Harker, Dickinson, Smokey Hollow, Pompey Pillar, Spring Valley and Otter Creeks all contained low-moderate abundances of adult brook trout (Figure 9). Preferred-size brook trout were also found, although on a much smaller scale. Only Cave Hollow, Pompey Pillar and Otter creeks contained preferred-size fish (Figure 11). Otter Creek at site 17 contained 59 fish per mile, followed by Pompey Pillar Creek at site 30 with 25 fish per mile, both above statewide and Driftless Area median values. However, all three streams were considered low-moderate on average.

## **DISCUSSION**

Overall, these watersheds contain fishable populations of both brook and brown trout. The majority of these streams contain mixed populations, typically in low to moderate abundance. A few streams have high abundance populations, and these include Pompey Pillar, Otter Creek, UNT to Smokey Hollow and Smokey Hollow creeks. Brook trout seemed to fare better in the smaller systems such as Cave Hollow, Martin, Lee, UNT to Smokey Hollow and UNT to Spring Valley. Whereas brown trout dominated Harker, Flint, Smokey Hollow, Pompey Pillar, Otter and Morrey creeks. No trout of any species were found in Pengelly or Penn Hollow creeks during surveys in 2022.

Cave Hollow Creek is a small Class 2 tributary that feeds Otter Creek and Blackhawk Lake in the upper reaches of the watershed. Overall, this stream is considered small, and fishability is low; however, public access is located along the lower portions surrounded by DNR state land. Historically, this stream has been known to contain a good population of brook trout with the potential to catch tiger trout on occasion. Current populations consist of both brook and brown trout in the upper reaches, with brook trout dominating the lower reaches. Stocking of Cave Hollow Creek continues on an annual basis, with an average of 622 large fingerling brook trout stocked over the last four years. Current management will continue with these stocking efforts,

and the stream will continue to be managed under the special regulation protecting brook trout while allowing the harvest of brown trout. Streambank easement authority should also be expanded along Cave Hollow Creek, given the current management objectives.

Martin and Lee creeks are two small tributaries to Harker Creek within the watershed, both considered Class 1 trout water. Martin Creek contained natural reproduction of brook trout in moderate abundance, while Lee Creek contained a low abundance on average. Lee Creek had a slightly higher abundance of age-1 and adult brook trout, likely due to stream size and habitat availability. Lee Creek also contained a low abundance of age-1 and adult brown trout coexisting with brook trout. Given the size and nature of the riparian corridors, these streams are appropriately classified; however, to better manage brook trout, the special regulation should be implemented. This regulation will follow management strategies already in place downstream in Harker Creek.

Harker Creek contained a mixed population of both brook and brown trout during surveys in 2022. This stream historically contained a high abundance of brook trout, with the possibility that these fish are genetically native to the lower Wisconsin River drainage. Reproduction was low for both species, with a low to moderate abundance of age-1 fish. Similar results were seen for adults; however, more brown trout were captured during surveys in 2022, suggesting that brown trout are increasing as the dominant species within this stream. Preferred-size brown trout were also seen in Harker Creek, whereas large adult brook trout were absent. Unfortunately, this trend seems to be occurring throughout the region and is likely to continue as climate change progresses. Public access in the form of streambank easements exists along Harker Creek. These eased lands have been managed well by the landowners thus far, and no riparian or in-stream habitat restoration is necessary in the near future.

Norwegian Hollow is a small Class 2 tributary to Flint Creek. This stream is surrounded by mostly wooded corridors with some grazed pastures intermittent. This likely helps keep temperatures cool, yet the overall habitat is lacking for fish. The substrate consists of sand and silt with low flows throughout the stream. With the lack of good habitat, stocking likely isn't a solution to increase the abundance of brown trout. This current population likely reflects the fishery's potential for this stream given its limitations, and because of this, the Class 2 designation will be upheld.

Flint Creek contained only brown trout with low levels of reproduction and moderate rates of age-1 fish overall. Along the lower two sites, adults and preferred-size fish were also in moderate abundance. These stream reaches contained ample habitat based on stream width, flow and in-stream habitat. However, the substrate wasn't ideal, consisting of shifting sand and silt likely due to agricultural land use in riparian areas throughout. Stocking efforts appear beneficial for Flint Creek, and therefore, the DNR will continue to stock large fingerling brown trout in this stream. Given the

investment of stocking, Flint Creek would also be an excellent location to expand streambank easement authority. This would allow the DNR to purchase lands to conserve and restore the riparian areas as well as provide access to the public for fishing. Therefore, Flint Creek should be added to the list of eligible streams during the next streambank easement authority expansion.

Dickinson Creek is a small Class 2 trout water that flows to the lower unclassified reaches of Otter Creek. Dickinson Creek contained mostly brown trout, with only a few adult brook trout captured. The biggest factor limiting the trout population in Dickinson Creek is the small size and relatively high temperatures, which exhibited stream temps near 70 degrees at both sites surveyed. These factors, coupled with extensive grazing and row cropping throughout, reduce opportunities for trout in Dickinson Creek. Given these impairments, stocking should be suspended until land use practices and in-stream conditions are appropriate to maintain a coldwater fishery. As of now, Dickinson Creek will continue to be managed as Class 2 trout water, but this should be monitored closely during the next watershed evaluation to determine if changes are necessary.

Smokey Hollow and UNT to Smokey Hollow are tributaries that flow to Pompey Pillar Creek. Smokey Hollow is currently Class 2 trout water, while the UNT to Smokey Hollow is unclassified. Smokey Hollow at site 27 contained a high abundance of age-0, age-1 and adult brown trout, although no browns were collected at the upper site at Smokey Hollow Road. Brook trout were also captured in Smokey Hollow but were generally low for all age classes. Interestingly, Smokey Hollow at CTH P had warm stream temps with a surprising amount of silt and deeper water that contained larger numbers of brown trout. The UNT to Smokey Hollow contained a moderate abundance of age-0 brook trout, with high levels of recruitment to age-1 and adults. A moderate abundance of age-1 and adult brown trout were also captured. Both streams had cold temps, lower flows and excellent habitat overall. These factors, coupled with good natural reproduction and recruitment to age-1 and adults, suggest that these streams should be classified as Class 1 trout waters throughout.

Pompey Pillar contains segments of both Class 1 and Class 2 trout water. Class 1 trout water is located upstream of CTH I, and Class 2 trout water is below, down to the confluence with Otter Creek. The Class 1 trout water is regulated with a special regulation allowing the harvest of brown and rainbow trout, while protecting all brook trout with a catch and release regulation. The county base regulation exists downstream of CTH I along the Class 2 waters. Over the last decade, brown trout have been on the rise with high catch rates, while brook trout numbers have remained in low abundance (Figure 12). Overall, the brown trout population has been thriving, with moderate to high abundance found in all size and age classes, whereas brook trout have been consistently low to moderate. Given that lower Pompey Pillar demonstrates good natural reproduction and recruitment to age-1 and adults, this portion should be re-classified to Class 1 trout water. Regulations along these reaches will also be maintained, and the DNR will continue to manage for brook trout

in the upper reaches of Pompey Pillar, where the habitat is excellent and stream temperatures are consistently cold. Lower Pompey Pillar Creek would benefit from a habitat restoration project as well. This section of stream has high, eroded banks that contribute excessive sediment along the streambed. Therefore, fisheries management will be proposing a project on the DNR easement to focus on streambank stabilization as well as increasing the in-stream habitat by installing boulders, root wads and alternating logs to create more overhead cover for adult habitat. Angler access and fishability will also be a focus of the project.

Unnamed Tributary to Spring Valley Creek is a Class 1 trout water that flows to the Class 2 trout waters of Spring Valley Creek. The UNT to Spring Valley was recently classified in 2021 as Class 1 trout water due to the presence of brook trout, with excellent natural reproduction and recruitment. Surveys in 2022 showed that natural reproduction and recruitment to age-1 and adults continue, although at a reduced level. Given the small size and low flows, these fish are likely utilizing all the available habitat and the UNT to Spring Valley is functioning as Class 1 water. Spring Valley Creek has historically been considered Class 2 trout water. Very few brook trout were surveyed in 2022, with no brown trout present. These fish surveyed are likely moving down from the UNT to Spring Valley once they reach age-1 or older in search of bigger water with more forage and available habitat. Ironically, Spring Valley Creek lacks contributing springs in the upper reaches, leading to increased temperatures. Because of these factors, stocking will not be used as a management tool for the trout population in this stream. Spring Valley Creek should be monitored closely during the next watershed evaluation to determine if this stream is in fact classified trout water or not.

Upper Otter Creek contains Class 2 trout water upstream of Blackhawk Lake. This stream segment has been historically managed for brook trout, with stocking and regulations. Surprisingly, the upstream reach contains warmer water than previously thought. No natural reproduction of brook trout was observed in 2022; however, there was moderate catch of age-1 based on statewide values, so there are some natural reproduction and recruitment occurring. The brown trout population was similar, with no natural reproduction observed, but high rates of natural recruitment of age-1 as well as adult fish. Overall, stocking of brook trout is necessary and should be continued to maintain this population in upper Otter Creek. Regulations protecting brook trout should also be upheld to protect the population and provide harvest opportunities for other trout species. To assist with brook trout management, streambank easement authority should also be acquired along upper Otter Creek to improve riparian habitat and water quality.

Otter Creek downstream of Blackhawk Lake differs substantially. Temperatures are colder, even with the lake discharge to the stream below. Very little reproduction of brown trout was found in lower Otter Creek, with moderate recruitment at site 5. However, the abundance of age-1 fish in lower Otter Creek may be artificially inflated due to the accidental stocking of large fingerling brown trout in the fall of 2021. This

site contained a high abundance of adult and preferred-size brown trout. Brook trout were present, but lower in abundance overall. Only a few rainbow trout were observed, even with extensive stocking over the past few years. Overall, this portion of Otter Creek is considered a stocked fishery and necessary to maintain the fishable population. Therefore, “put and grow” stocking of fingerling brown trout should continue. Stocking of surplus adult brood stock can also continue with brook and brown trout, but the regulations below Blackhawk Lake should be aligned with this put-and-take element of the fishery. In order to expand these opportunities for anglers, a regulation change proposal will be pursued to allow the harvest of three trout over 8 inches along the classified waters downstream of Blackhawk Lake.

Morrey Creek is a Class 2 trout water that flows directly to the lower Wisconsin River and doesn't contain any other major tributaries. Brown trout was the only trout species captured during surveys in 2022. Natural reproduction was not observed during surveys, but there was evidence of natural recruitment with no stocking from 2021. The upper two sites contained a moderate abundance of age-1, adult and preferred-size brown trout. The lower site upstream of STH 130 only contained a few brown trout, as this site was very shallow and consisted of only shifting sand substrate and little to no instream habitat. The Morrey Creek trout population seems to reflect the surrounding land use practices, as grazing and row crops are abundant throughout, with lower stream reaches where the stream has been straightened in the past. Given that adequate stream flows and cold temperatures were observed, Morrey Creek could produce a moderate fishery with potential for reproduction; however, this is unlikely without habitat enhancement and protection. This will be difficult, as no public lands or easements exist. Therefore, streambank easement acquisition should be expanded along Morrey Creek in the future to allow access for fishing and a means for habitat protection and stream conservation. Additionally, the stocking of brown trout should be suspended until adequate public access is acquired along this stream.

Only one trout potential site was surveyed during the watershed assessment in 2022 (Figure 1). This site on the UNT to Smokey Hollow Creek contained both brook and brown trout. The brook trout exhibited moderate rates of reproduction with high levels of recruitment to age-1 and adult fish based on both statewide and Driftless Area standards. No reproduction of brown trout was observed, with only low rates of recruitment and adult fish. As mentioned previously, given the excellent brook trout population, excellent stream habitat and cold temperatures, this stream should be classified as Class 1 trout water during the next stream classification cycle in 2025.

## MANAGEMENT RECOMMENDATIONS

- 1) **GOAL:** Acquire more streambank easements to provide access for fishing.  
**OBJECTIVE:** Acquire 2 miles of additional streambank easements along Harker, Flint, Morrey creeks over the next six years.  
**STRATEGY:** Expand SBE authority on Flint, Morrey, Upper Otter, Cave Hollow and Baker creeks during the next watershed acquisition review cycle and continue landowner outreach through postcard mailings and landowner contacts.
- 2) **GOAL:** Restore in-stream habitat and streambanks along middle Pompey Pillar Creek.  
**OBJECTIVE:** Improve one mile of streambank and in-stream habitat by 2027.  
**STRATEGY:** Initiate habitat improvement project along middle Pompey Pillar easement lands downstream of CTH I. Evaluate and schedule future follow-up tree planting.
- 3) **GOAL:** Expand angler harvest opportunities and simplify regulations on Narveson and Otter creeks below Blackhawk Lake.  
**OBJECTIVE:** Switch Narveson Creek and Otter Creek (From Blackhawk Lake down to confluence with Dickinson Creek) from catch and release to the county base regulation.  
**STRATEGY:** Propose regulation change to three fish daily bag limit with an 8-inch minimum length limit.
- 4) **GOAL:** Increase abundance of brook trout in Lee and Martin creeks.  
**OBJECTIVE:** Increase adult abundance to >80 per mile of adult brook trout.  
**STRATEGY:** Implement special regulation allowing the harvest of five trout in total: all brook trout caught shall be immediately released, and no minimum length limit for brown and rainbow trout.

## ADDITIONAL MANAGEMENT RECOMMENDATIONS

- Declassify Penn Hollow Creek during the next classification cycle in 2025.
- Declassify Pengelly Creek during the next classification cycle in 2025.
- Classify UNT to Smokey Hollow Creek (WBIC: 5035999) as Class 1 trout water during the next classification cycle in 2025.
- Re-classify Smoky Hollow Creek as Class 1 trout water during the next classification cycle in 2025.
- Re-classify lower Pompey Pillar Creek downstream of CTH I as Class 1 trout water during the next classification cycle in 2025.
- Declassify Otter Creek from Blackhawk Lake downstream to Plank Road to reduce the confusion among anglers and law enforcement staff.
- Suspend stocking on Morrey Creek until public access is acquired.
- Suspend stocking on Dickinson Creek.



- Continue stocking brook trout in Pompey Pillar through 2026 as part of an experimental genetic restoration stocking study that was implemented in 2021.

## References

- Ripp, C.W., Koperski, C., and J. Folstad. 2002. The State of the Lower Wisconsin River Basin. 459pp. Wisconsin Department of Natural Resources, Madison, Wisconsin. PUBL WT-559-2002.
- Simonson, T. 2015. Surveys and Investigations – Inland Fisheries Surveys. Fish Management Handbook Chapter 510, Wisconsin Department of Natural Resources internal publication. Madison, Wisconsin.
- Stroud Water Research Center. 2021. Model My Watershed. <https://modelmywatershed.org/>. (December 2021).
- Wisconsin Department of Natural Resources. 2013. Regional and property analysis for the development of a master plan for Department of Natural Resources' properties along trout and Smallmouth Bass streams in the Driftless Area. Wisconsin Department of Natural Resources internal publication LF-071. Madison, Wisconsin.

Table 1. Watershed and land cover statistics in the Otter Creek and Morrey Creek watersheds.

**Otter Creek**

<b>LAND COVER</b>	<b>PERCENT OF WATERSHED</b>
Forest	44
Cultivated Crops	19
Pasture/hay	27
Other	10

**Morrey Creek**

<b>LAND COVER</b>	<b>PERCENT OF WATERSHED</b>
Forest	54
Cultivated Crops	23
Pasture/hay	17
Other	6

Table 2. Sampling locations by stream and station.

STREAM	STATION NAME	STATION NUMBER	SAMPLING DATE	LAT.	LONG.
CAVE HOLLOW CREEK	CAVE HOLLOW CR DS OF CAVE HOLLOW RD	2	06/22/2022	42.9878	-90.3056
CAVE HOLLOW CREEK	CAVE HOLLOW ~330M US OTTER CR CONFLUENCE	4	06/22/2022	42.9984	-90.2848
MARTIN CREEK	MARTIN BRANCH STATION 1	1	07/13/2022	42.9875	-90.2404
LEE CREEK	LEE CREEK STATION 2	5	07/19/2022	43.0000	-90.2398
LEE CREEK	LEE CREEK US BERG RD	9	07/07/2022	43.0114	-90.2399
HARKER CREEK	HARKER CR AT 3523 BERG RD	3	07/13/2022	42.9930	-90.2186
HARKER CREEK	HARKER CR ~ 4000FT US LEE CR CONFLUENCE	8	07/14/2022	43.0106	-90.2351
HARKER CREEK	HARKER CR AT 2831 MT HOPE RD	11	07/18/2022	43.0161	-90.2401
PENGELLY CREEK	PENGELLY CR ~7500 FT US FLINT CR CONFLUENCE	7	07/26/2022	43.0078	-90.1552
PENGELLY CREEK	PENGELLY CR ~900 FT US FLINT CR CONFLUENCE	10	07/26/2022	43.0130	-90.1649
NORWEGIAN HOLLOW CREEK	NORWEGIAN HOLLOW CREEK 30 M DOWNSTREAM OF OTTER RD. BRIDGE	16	06/30/2022	43.0334	-90.2010
NORWEGIAN HOLLOW CREEK	NORWEGIAN HOLLOW AT NORWEGIAN HOLLOW RD 1ST CROSSING DOWNSTREAM	15	06/30/2022	43.0342	-90.1910
DICKINSON CREEK	DICKENSON CR US FACTORY RD	20	06/30/2022	43.0573	-90.2310
DICKINSON CREEK	DICKENSON CREEK AT MIESS AND FACTORY RDS ST. #4	21	06/30/2022	43.0604	-90.2454
FLINT CREEK	FLINT CREEK AT WILSON RD	12	06/30/2022	43.0185	-90.1718
FLINT CREEK	FLINT CREEK AT ESCH RD.	13	06/30/2022	43.0254	-90.1912
FLINT CREEK	FLINT CREEK DOWNSTREAM OF CTY Q 2012 HABITAT IMPROVEMENT	14	07/18/2022	43.0255	-90.2304
FLINT CREEK	FLINT CR ~350M US CONFLUENCE OF OTTER CR	18	07/18/2022	43.0371	-90.2537
UNNAMED TRIBUTARY TO SMOKEY HOLLOW	UNNAMED TRIB TO SMOKEY HOLLOW ~290M US COUNCIL BLUFFS RD	22	07/18/2022	43.0608	-90.3008
SMOKY HOLLOW CREEK	SMOKEY HOLLOW CREEK (ATSMOKEY HOLLOW RD)	24	06/23/2022	43.0618	-90.3241
SMOKY HOLLOW CREEK	SMOKY HOLLOW CREEK AT HWY P	27	06/22/2022	43.0766	-90.2808
POMPEY PILLAR CREEK	POMPEY PILLAR CREEK-BASELINE SURVEY	28	07/07/2022	43.0803	-90.3298
POMPEY PILLAR CREEK	POMPEY PILLAR STATION 1 20FT ABOVE CHY I	29	07/19/2022	43.0821	-90.3160
POMPEY PILLAR CREEK	POMPEY PILLAR CREEK - STATION 4	30	07/19/2022	43.0831	-90.2805

POMPEY PILLAR CREEK	POMPEY PILLAR CREEK - STATION 1	31	07/28/2022	43.0855	-90.2729
UNNAMED TRIBUTARY TO	UNNAMED TRIB TO SPRING VALLEY (WBIC 1237700)				
SPRING VALLEY	US HUNTER HOLLOW RD (2ND CROSSING)	25	07/29/2022	43.0728	-90.2184
UNNAMED TRIBUTARY TO	UNNAMED TRIB TO SPRING VALLEY CREEK DS SHOP				
SPRING VALLEY	HILL RD	26	07/29/2022	43.0759	-90.2307
SPRING VALLEY CREEK	SPRING VALLEY CR AT MILL RD	32	07/28/2022	43.0882	-90.2215
	SPRING VALLEY CREEK UPSTREAM OF OTTER CREEK				
SPRING VALLEY CREEK	CONFLUENCE	33	07/26/2022	43.0956	-90.2472
PENN HOLLOW CREEK	PENN HOLLOW CR US LEACHES CROSSING RD	35	06/23/2022	43.1350	-90.2358
PENN HOLLOW CREEK	PENN HOLLOW CR US STH 130	34	06/23/2022	43.1331	-90.2178
	OTTER CREEK UNION VALLEY RD. (NEAR MT HOPE				
OTTER CREEK	RD.)	6	06/22/2022	43.0032	-90.2863
OTTER CREEK	OTTER CREEK GENERAL FISH #5	17	07/27/2022	43.0343	-90.2643
OTTER CREEK	OTTER CREEK ~ 2200 FT DS OF CTH Q	19	07/27/2022	43.0436	-90.2599
OTTER CREEK	OTTER CREEK- COUNTY HWY II	23	07/27/2022	43.0618	-90.2560
	MORREY CREEK UPSTREAM OF SAND HILL RD				
MORREY CREEK	BRIDGE	36	07/13/2022	43.1370	-90.3418
MORREY CREEK	MORREY CREEK UPSTREAM OF PRIVATE DR BRIDGE	37	07/13/2022	43.1620	-90.3435
MORREY CREEK	MORREY CREEK - HWY 133	38	07/13/2022	43.1829	-90.3420

Table 3. Summary of DNR stocking within the Otter Creek watershed from 2017-2021.

STREAM	SPECIES	AGE CLASS	2017	2018	2019	2020	2021
<b>Cave Hollow</b>	Brook Trout	Large Fingerling	475	480	1109	425	
<b>Dickinson Creek</b>	Brown Trout	Small Fingerling	862				
	Brown Trout	Large Fingerling		726	1320	660	
<b>Flint Creek</b>	Brown Trout	Small Fingerling	3448				
	Brown Trout	Large Fingerling		2563	3750	1875	
<b>Morrey Creek</b>	Brown Trout	Small Fingerling	862				
	Brown Trout	Large Fingerling		726	660	660	
<b>Otter Creek</b>	Brook Trout	Large Fingerling	1418	550	1270	550	
	Brook Trout	Broodstock	19	30	30	30	30
	Brown Trout	Broodstock	1053	82	120		200
	Brown Trout	Large Fingerling		2100	3080	1500	1441
	Rainbow Trout	Broodstock	19	29	15		
	Rainbow Trout	Small Fingerling	19900	7493	6040		5000
<b>Pompey Pillar</b>	Brook Trout	Large Fingerling	969				314
<b>Smokey Hollow Creek</b>	Brook Trout	Large Fingerling	600				

Table 4. Statewide and Driftless Area percentiles for brook and brown trout populations. These values were summarized for Class 1 trout populations sampled from 2012-2021, where at least one trout was collected.

	STATEWIDE PERCENTILES			DRIFTLESS PERCENTILES		
	35 <sup>TH</sup>	MEDIAN	65 <sup>TH</sup>	35 <sup>TH</sup>	MEDIAN	65 <sup>TH</sup>
<b>Brown</b>						
<4 inches	58.1	119.3	247.5	71.1	136.1	256.1
4 to 8 inches	115	199.2	337.2	135.6	229.9	383.2
>8 inches	112.7	205.8	341.9	191.6	330.8	509.7
>12 inches	30.3	47.6	72	42.9	63.2	85.8
<b>Brook</b>						
<4 inches	72.4	145.3	241.4	68.6	128.7	209.2
4 to 7 inches	80.5	149.2	257.2	44.9	80.5	150.9
>7 inches	48.3	80.5	129.4	47.9	80.5	124
>10 inches	12.8	16.4	27.5	14.3	16.1	29.1

Table 5. Station metrics for Otter Creek and its tributaries.

STATION NAME	HABITAT RATING	TROUT CLASS	GEAR	STATION LENGTH (MI)	MEAN STREAM WIDTH (M)	FLOW (CFS)	STREAM TEMP (°F)
CAVE HOLLOW CR DS OF CAVE HOLLOW RD	GOOD	2	BACKPACK	0.08	0.90	0.71	58.4
CAVE HOLLOW ~330M US OTTER CR CONFLUENCE	EXCELLENT	2	BACKPACK	0.07	2.30	1.06	66
MARTIN BRANCH STATION 1	EXCELLENT	1	BACKPACK	0.07	1.20	0.35	60.4
LEE CREEK STATION 2	GOOD	1	BACKPACK	0.07	2.30	2.47	67.4
LEE CREEK US BERG RD	GOOD	1	BACKPACK	0.07	1.80	2.83	67.3
HARKER CR AT 3523 BERG RD	EXCELLENT	1	BACKPACK	0.07	1.80	0.71	66
HARKER CR ~ 4000FT US LEE CR CONFLUENCE	EXCELLENT	1	BACKPACK	0.08	1.70	1.77	65.7
			STREAM				
HARKER CR AT 2831 MT HOPE RD	GOOD	1	SHOCKER	0.09	2.60	3.88	70
PENGELLY CR ~7500 FT US FLINT CR CONFLUENCE	GOOD	2	BACKPACK	0.07	1.00	0.35	59.6
PENGELLY CR ~900 FT US FLINT CR CONFLUENCE	GOOD	2	BACKPACK	0.08	2.10	1.06	60.2
NORWEGIAN HOLLOW AT NORWEGIAN HOLLOW RD							
1ST CROSSING DOWNSTREAM	FAIR	2	BACKPACK	0.07	1.30	1.41	59.7
NORWEGIAN HOLLOW CREEK 30 M DOWNSTREAM OF OTTER RD. BRIDGE	GOOD	2	BACKPACK	0.08	2.00	1.06	63
DICKENSON CR US FACTORY RD	GOOD	2	BACKPACK	0.09	1.90	1.77	69
DICKENSON CREEK AT MIESS AND FACTORY RDS ST. #4	GOOD	2	BACKPACK	0.08	2.30	2.12	69.8
FLINT CREEK AT WILSON RD	GOOD	2	BACKPACK	0.07	2.10	2.47	69.7
FLINT CREEK AT ESCH RD.	GOOD	2	BACKPACK	0.06	2.40	2.83	71.5
FLINT CREEK DOWNSTREAM OF CTY Q 2012 HABITAT IMPROVEMENT	EXCELLENT	2	SHOCKER	0.08	3.70	4.59	67.3
			STREAM				
FLINT CR ~350M US CONFLUENCE OF OTTER CR	GOOD	2	SHOCKER	0.14	4.70	13.07	74.2
UNNAMED TRIB TO SMOKEY HOLLOW ~290M US COUNCIL BLUFFS RD	EXCELLENT	UNCLASSIFIED	BACKPACK	0.07	2.50	0.35	54.5
SMOKEY HOLLOW CREEK (ATSMOKEY HOLLOW RD)	EXCELLENT	2	BACKPACK	0.08	2.10	0.35	60
			STREAM				
SMOKY HOLLOW CREEK AT HWY P	EXCELLENT	2	SHOCKER	0.10	2.70	2.83	73.3
POMPEY PILLAR CREEK-BASELINE SURVEY	EXCELLENT	1	BACKPACK	0.07	2.60	1.06	55.7



POMPEY PILLAR STATION 1 20FT ABOVE CHY I	EXCELLENT	1	STREAM SHOCKER	0.10	4.00	1.77	56.8
POMPEY PILLAR CREEK - STATION 4	GOOD	2	STREAM SHOCKER	0.16	4.20	3.18	66.9
POMPEY PILLAR CREEK - STATION 1	EXCELLENT	2	STREAM SHOCKER	0.13	7.20	10.59	68.8
UNNAMED TRIB TO SPRING VALLEY (WBIC 1237700) US HUNTER HOLLOW RD (2ND CROSSING)	GOOD	1	BACKPACK	0.08	1.40	0.35	63.1
UNNAMED TRIB TO SPRING VALLEY CREEK DS SHOP HILL RD	GOOD	1	BACKPACK	0.07	2.90	0.35	67.5
SPRING VALLEY CR AT MILL RD	FAIR	2	BACKPACK	0.09	2.20	0.35	76.4
SPRING VALLEY CREEK UPSTREAM OF OTTER CREEK CONFLUENCE	FAIR	2	BACKPACK	0.10	2.60	1.77	62.9
PENN HOLLOW CR US LEACHES CROSSING RD	FAIR	2	BACKPACK	0.07	2.90	1.77	61
PENN HOLLOW CR US STH 130	FAIR	2	BACKPACK	0.08	3.70	2.12	65.9
OTTER CREEK UNION VALLEY RD. (NEAR MT HOPE RD.)	GOOD	2	BACKPACK	0.06	2.90	3.53	71.3
OTTER CREEK GENERAL FISH #5	EXCELLENT	2	STREAM SHOCKER	0.17	5.50	9.89	64.2
OTTER CREEK ~ 2200 FT DS OF CTH Q	GOOD	2	STREAM SHOCKER	0.19	7.80	21.90	68.2
OTTER CREEK- COUNTY HWY II	FAIR	2	STREAM SHOCKER	0.20	10.30	24.01	71.6
MORREY CREEK UPSTREAM OF SAND HILL RD BRIDGE	FAIR	2	BACKPACK	0.08	3.10	1.41	61.3
MORREY CREEK UPSTREAM OF PRIVATE DR BRIDGE	FAIR	2	STREAM SHOCKER	0.08	5.60	5.65	57.9
MORREY CREEK - HWY 133	POOR	2	STREAM SHOCKER	0.09	5.20	4.94	65.4

Table 6. Brown trout CPUE by stream and station.

<b>STATION NAME</b>	<b>STATION NUMBER</b>	<b>CPUE (FISH/MILE)</b>	<b>BROWN &lt;4</b>	<b>BROWN 4-7.9</b>	<b>BROWN ≥8</b>	<b>BROWN ≥12</b>
CAVE HOLLOW CR DS OF CAVE HOLLOW RD	2		0.0	250.0	187.5	87.5
CAVE HOLLOW ~330M US OTTER CR CONFLUENCE	4		0.0	14.9	0.0	0.0
MARTIN BRANCH STATION 1	1		0.0	0.0	0.0	0.0
LEE CREEK STATION 2	5		0.0	0.0	13.7	0.0
LEE CREEK US BERG RD	9		0.0	114.3	114.3	0.0
HARKER CR AT 3523 BERG RD	3		0.0	26.7	0.0	0.0
HARKER CR ~ 4000FT US LEE CR CONFLUENCE	8		38.5	205.1	115.4	12.8
HARKER CR AT 2831 MT HOPE RD	11		32.3	225.8	451.6	129.0
PENGELLY CR ~7500 FT US FLINT CR CONFLUENCE	7		0.0	0.0	0.0	0.0
PENGELLY CR ~900 FT US FLINT CR CONFLUENCE	10		0.0	0.0	0.0	0.0
NORWEGIAN HOLLOW CREEK 30 M DOWNSTREAM OF OTTER RD. BRIDGE	16		12.7	63.3	25.3	0.0
NORWEGIAN HOLLOW AT NORWEGIAN HOLLOW RD 1ST CROSSING DOWNSTREAM	15		0.0	44.8	0.0	0.0
DICKENSON CR US FACTORY RD	20		11.5	103.4	23.0	0.0
DICKENSON CREEK AT MIESS AND FACTORY RDS ST. #4	21		0.0	78.9	13.2	0.0
FLINT CREEK AT WILSON RD	12		0.0	14.9	29.9	0.0
FLINT CREEK AT ESCH RD.	13		96.8	193.5	112.9	16.1
FLINT CREEK DOWNSTREAM OF CTY Q 2012 HABITAT IMPROVEMENT	14		0.0	123.5	432.1	86.4
FLINT CR ~350M US CONFLUENCE OF OTTER CR	18		0.0	50.4	158.3	43.2
UNNAMED TRIB TO SMOKEY HOLLOW ~290M US COUNCIL BLUFFS RD	22		0.0	81.1	54.1	0.0
SMOKEY HOLLOW CREEK (ATSMOKEY HOLLOW RD)	24		0.0	0.0	0.0	0.0
SMOKY HOLLOW CREEK AT HWY P	27		396.0	386.1	594.1	79.2
POMPEY PILLAR CREEK-BASELINE SURVEY	28		119.4	403.0	44.8	0.0
POMPEY PILLAR STATION 1 20FT ABOVE CHY I	29		96.2	1942.3	1807.7	76.9
POMPEY PILLAR CREEK - STATION 4	30		43.2	179.0	240.7	55.6

POMPEY PILLAR CREEK - STATION 1	31	15.7	94.5	456.7	118.1
UNNAMED TRIB TO SPRING VALLEY (WBIC 1237700) US					
HUNTER HOLLOW RD (2ND CROSSING)	25	0.0	0.0	0.0	0.0
UNNAMED TRIB TO SPRING VALLEY CREEK DS SHOP HILL RD	26	0.0	0.0	0.0	0.0
SPRING VALLEY CR AT MILL RD	32	0.0	0.0	0.0	0.0
SPRING VALLEY CREEK UPSTREAM OF OTTER CREEK					
CONFLUENCE	33	0.0	0.0	0.0	0.0
PENN HOLLOW CR US LEACHES CROSSING RD	35	0.0	0.0	0.0	0.0
PENN HOLLOW CR US STH 130	34	0.0	0.0	0.0	0.0
OTTER CREEK UNION VALLEY RD. (NEAR MT HOPE RD.)	6	0.0	369.2	338.5	30.8
OTTER CREEK GENERAL FISH #5	17	41.2	311.8	823.5	205.9
OTTER CREEK ~ 2200 FT DS OF CTH Q	19	15.5	72.5	145.1	20.7
OTTER CREEK- COUNTY HWY II	23	0.0	5.0	24.8	14.9
MORREY CREEK UPSTREAM OF SAND HILL RD BRIDGE	36	0.0	65.8	78.9	0.0
MORREY CREEK UPSTREAM OF PRIVATE DR BRIDGE	37	0.0	246.9	419.8	61.7
MORREY CREEK - HWY 133	38	0.0	0.0	22.0	11.0

Table 7. Brook trout CPUE by stream and station.

<b>STATION NAME</b>	<b>STATION NUMBER</b>	<b>CPUE (FISH/MILE)</b>	<b>BROOK &lt;4</b>	<b>BROOK 4-6.9</b>	<b>BROOK ≥7</b>	<b>BROOK ≥10</b>
CAVE HOLLOW CR DS OF CAVE HOLLOW RD	2		134.3	134.3	44.8	0.0
CAVE HOLLOW ~330M US OTTER CR CONFLUENCE	4		0.0	25.0	300.0	12.5
MARTIN BRANCH STATION 1	1		109.6	27.4	13.7	0.0
LEE CREEK STATION 2	5		54.8	150.7	54.8	0.0
LEE CREEK US BERG RD	9		0.0	0.0	28.6	0.0
HARKER CR AT 3523 BERG RD	3		66.7	80.0	13.3	0.0
HARKER CR ~ 4000FT US LEE CR CONFLUENCE	8		0.0	25.6	51.3	0.0
HARKER CR AT 2831 MT HOPE RD	11		0.0	0.0	21.5	0.0
PENGELLY CR ~7500 FT US FLINT CR CONFLUENCE	7		0.0	0.0	0.0	0.0
PENGELLY CR ~900 FT US FLINT CR CONFLUENCE	10		0.0	0.0	0.0	0.0
NORWEGIAN HOLLOW CREEK 30 M DOWNSTREAM OF OTTER RD. BRIDGE	16		0.0	0.0	0.0	0.0
NORWEGIAN HOLLOW AT NORWEGIAN HOLLOW RD 1ST CROSSING DOWNSTREAM	15		0.0	0.0	0.0	0.0
DICKENSON CR US FACTORY RD	20		0.0	0.0	11.5	0.0
DICKENSON CREEK AT MIESS AND FACTORY RDS ST. #4	21		0.0	0.0	13.2	0.0
FLINT CREEK AT WILSON RD	12		0.0	0.0	0.0	0.0
FLINT CREEK AT ESCH RD.	13		0.0	0.0	0.0	0.0
FLINT CREEK DOWNSTREAM OF CTY Q 2012 HABITAT IMPROVEMENT	14		0.0	0.0	0.0	0.0
FLINT CR ~350M US CONFLUENCE OF OTTER CR	18		0.0	0.0	0.0	0.0
UNNAMED TRIB TO SMOKEY HOLLOW ~290M US COUNCIL BLUFFS RD	22		175.7	581.1	270.3	0.0
SMOKEY HOLLOW CREEK (ATSMOKEY HOLLOW RD)	24		0.0	26.3	52.6	0.0
SMOKY HOLLOW CREEK AT HWY P	27		19.8	0.0	9.9	0.0
POMPEY PILLAR CREEK-BASELINE SURVEY	28		14.9	74.6	59.7	0.0
POMPEY PILLAR STATION 1 20FT ABOVE CHY I	29		38.5	38.5	48.1	9.6
POMPEY PILLAR CREEK - STATION 4	30		18.5	0.0	37.0	24.7

POMPEY PILLAR CREEK - STATION 1	31	0.0	0.0	15.7	0.0
UNNAMED TRIB TO SPRING VALLEY (WBIC 1237700) US HUNTER HOLLOW RD (2ND CROSSING)	25	71.4	47.6	23.8	0.0
UNNAMED TRIB TO SPRING VALLEY CREEK DS SHOP HILL RD	26	0.0	71.4	200.0	0.0
SPRING VALLEY CR AT MILL RD	32	0.0	0.0	0.0	0.0
SPRING VALLEY CREEK UPSTREAM OF OTTER CREEK CONFLUENCE	33	10.2	30.6	20.4	0.0
PENN HOLLOW CR US LEACHES CROSSING RD	35	0.0	0.0	0.0	0.0
PENN HOLLOW CR US STH 130	34	0.0	0.0	0.0	0.0
OTTER CREEK UNION VALLEY RD. (NEAR MT HOPE RD.)	6	0.0	169.2	123.1	15.4
OTTER CREEK GENERAL FISH #5	17	0.0	0.0	88.2	58.8
OTTER CREEK ~ 2200 FT DS OF CTH Q	19	0.0	0.0	10.4	0.0
OTTER CREEK- COUNTY HWY II	23	0.0	0.0	0.0	0.0
MORREY CREEK UPSTREAM OF SAND HILL RD BRIDGE	36	0.0	0.0	0.0	0.0
MORREY CREEK UPSTREAM OF PRIVATE DR BRIDGE	37	0.0	0.0	0.0	0.0
MORREY CREEK - HWY 133	38	0.0	0.0	0.0	0.0

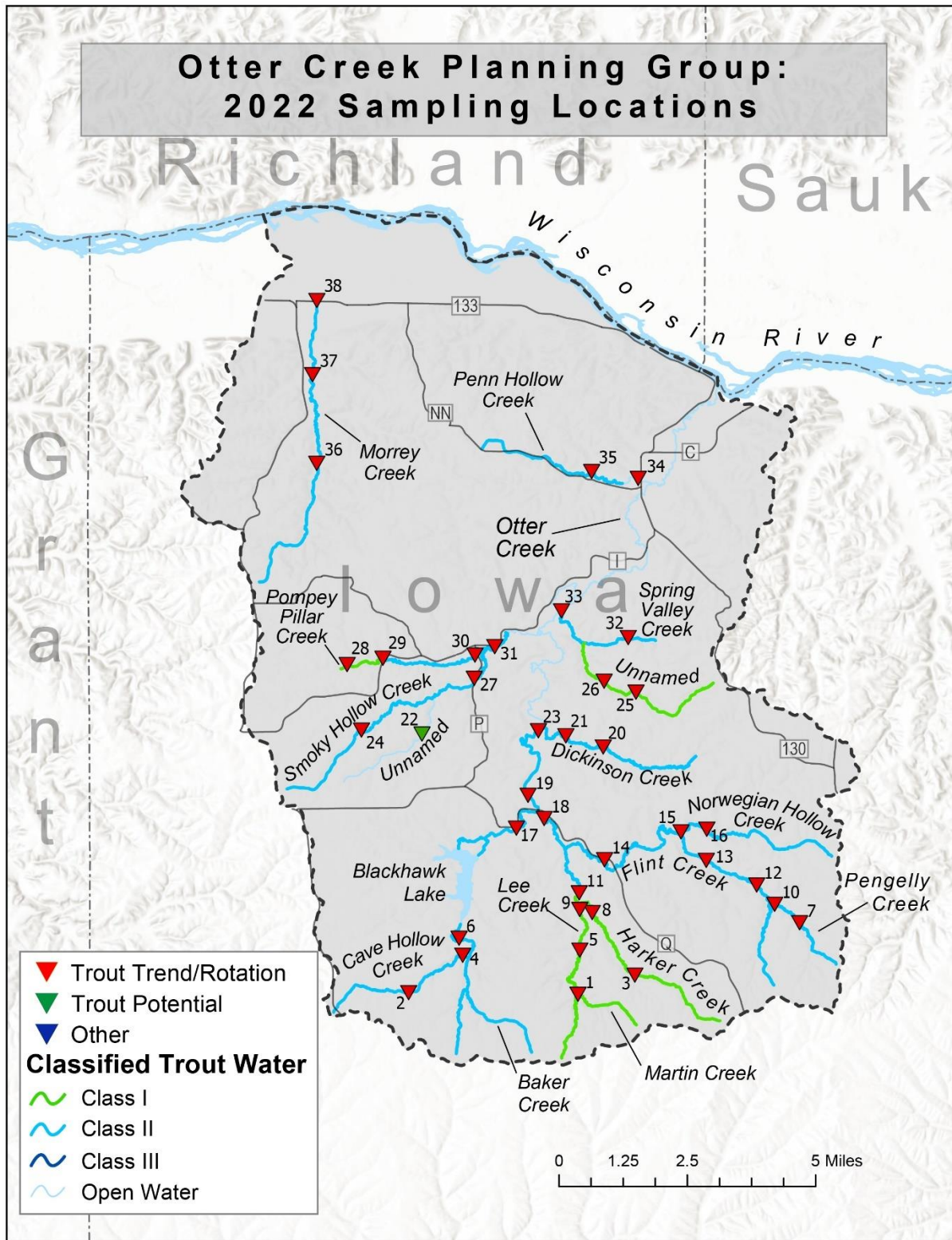


Figure 1. All sampled locations within the Otter Creek watershed in 2022.

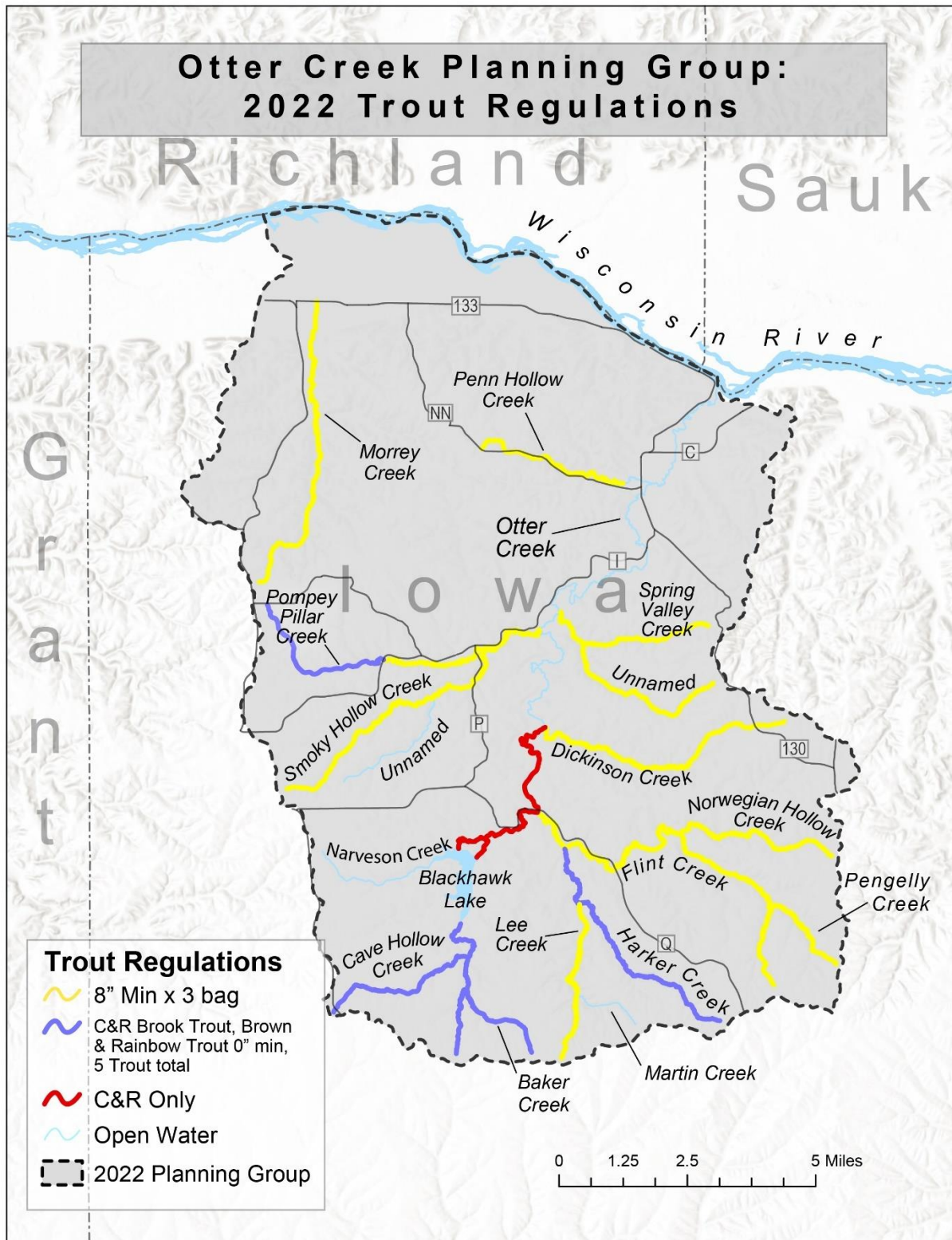


Figure 2. Trout regulation map within Otter Creek watershed in 2022.







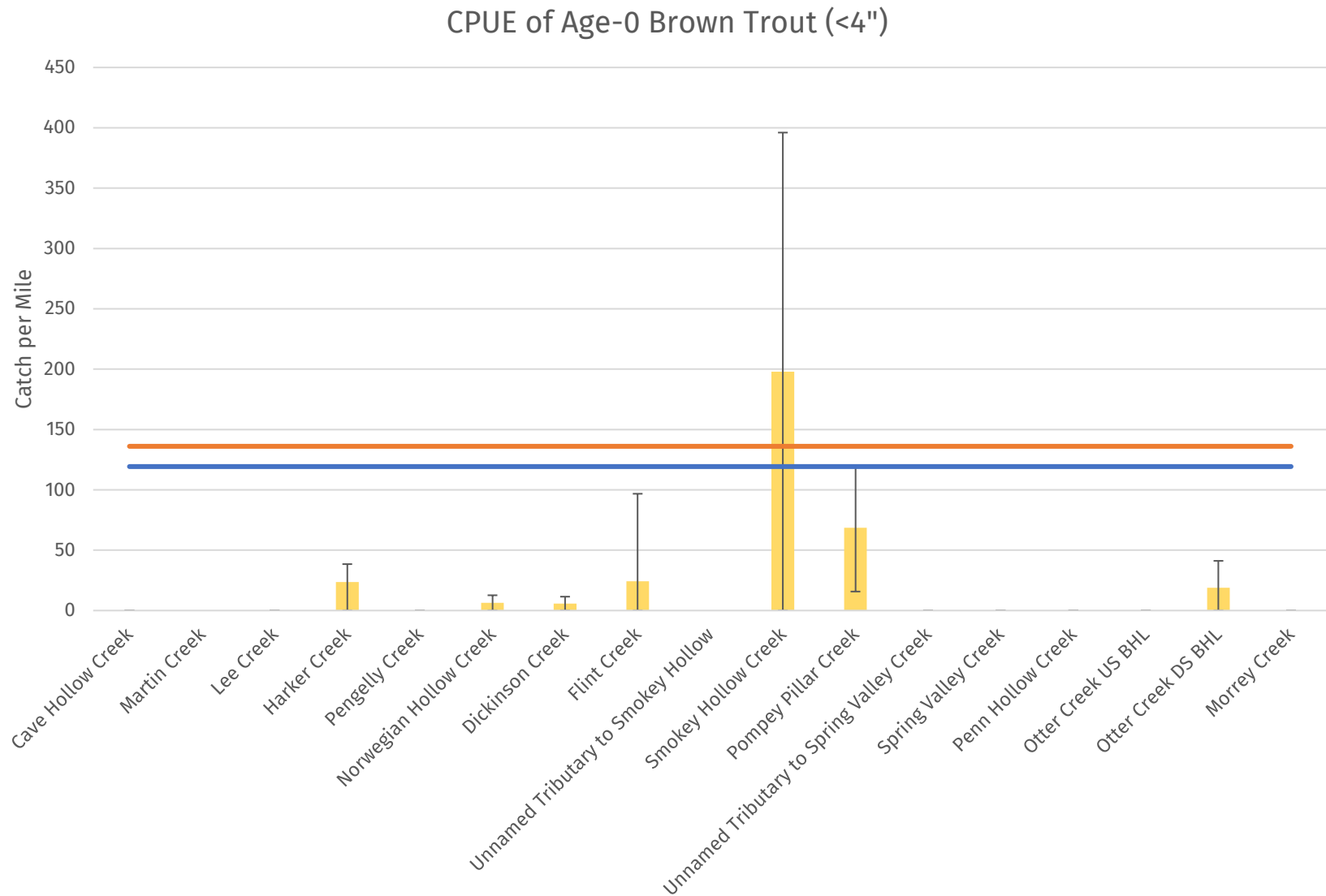


Figure 4. CPUE of age-0 brown trout in the Otter Creek watershed. The blue line refers to the Driftless Area median while the orange line refers to the statewide median.

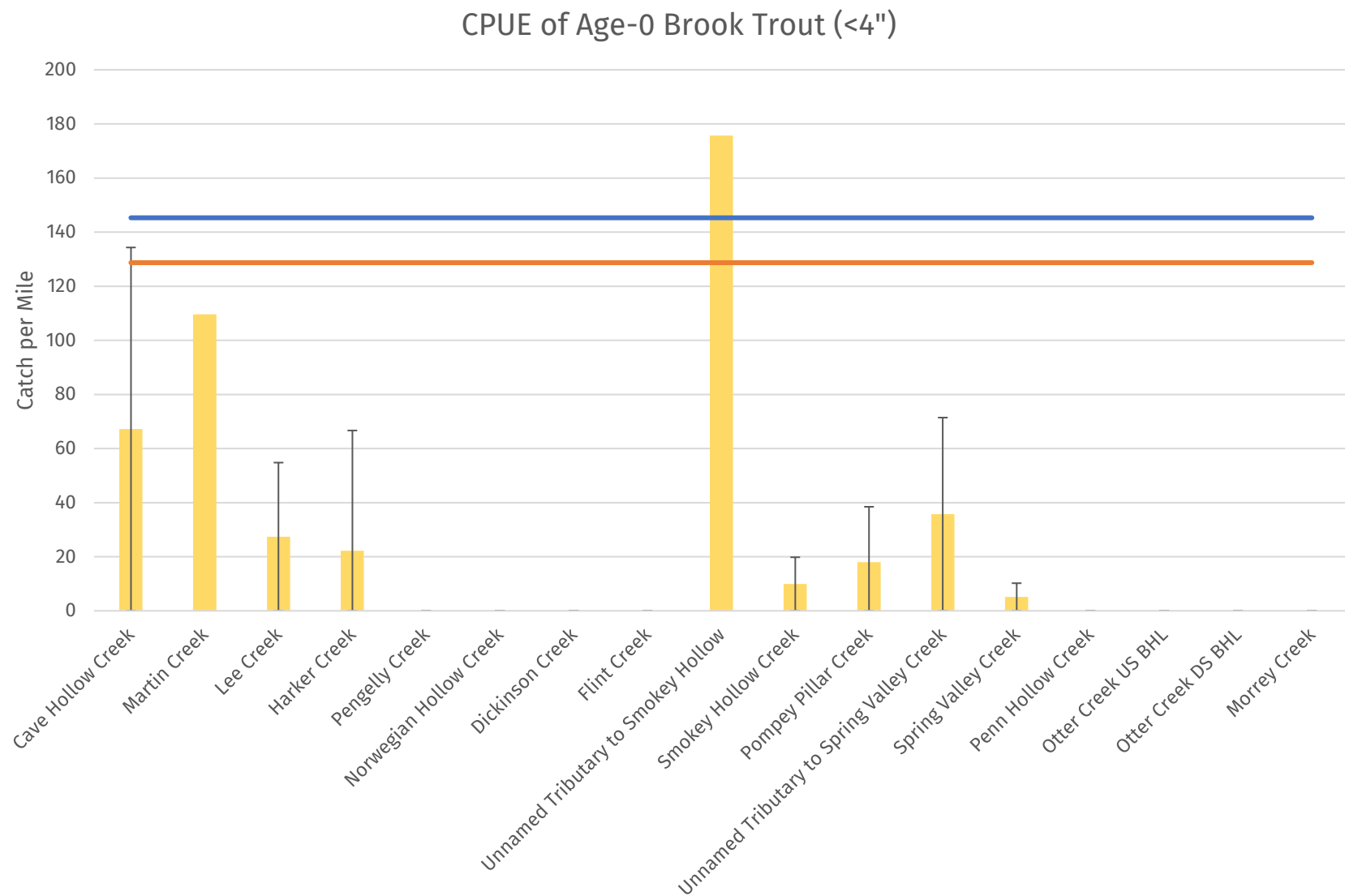


Figure 5. CPUE of age-0 brook trout in the Otter Creek watershed. The blue line refers to the Driftless Area median while the orange line refers to the statewide median.

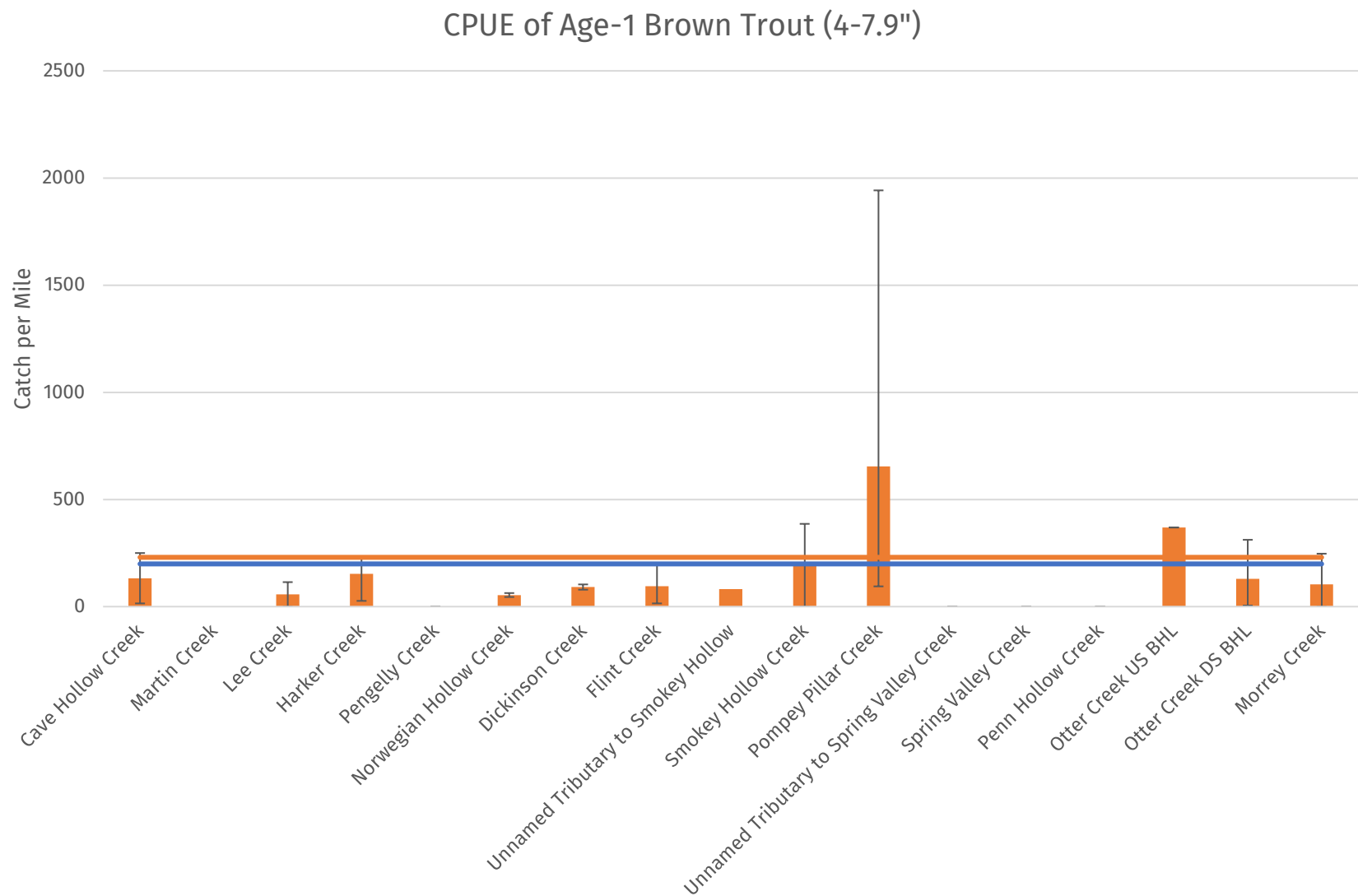


Figure 6. CPUE of yearling brown trout in the Otter Creek watershed. The blue line refers to the Driftless Area median while the orange line refers to the statewide median.

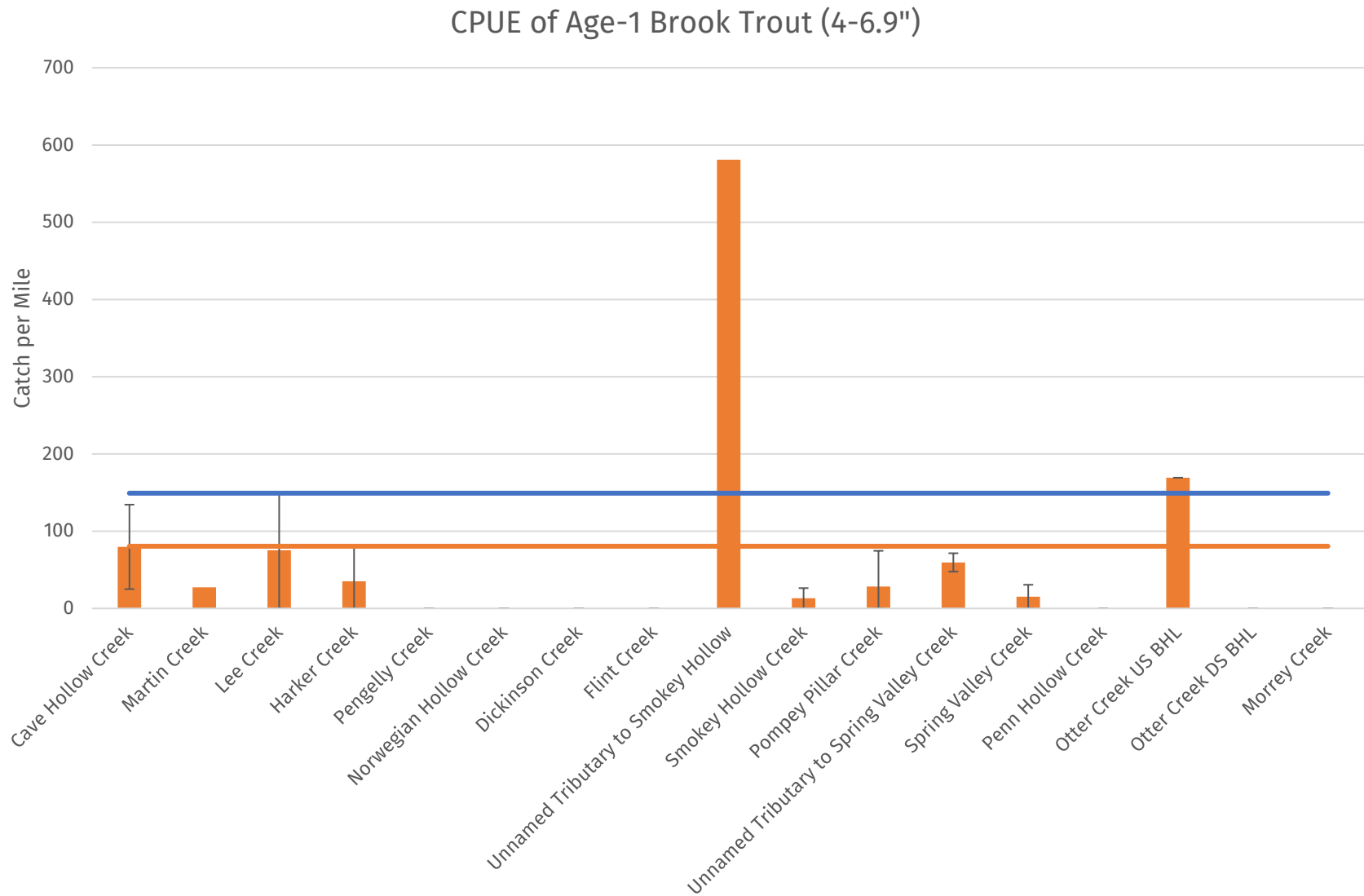


Figure 7. CPUE of yearling brook trout in the Otter Creek watershed. The blue line refers to the Driftless Area median while the orange line refers to the statewide median.

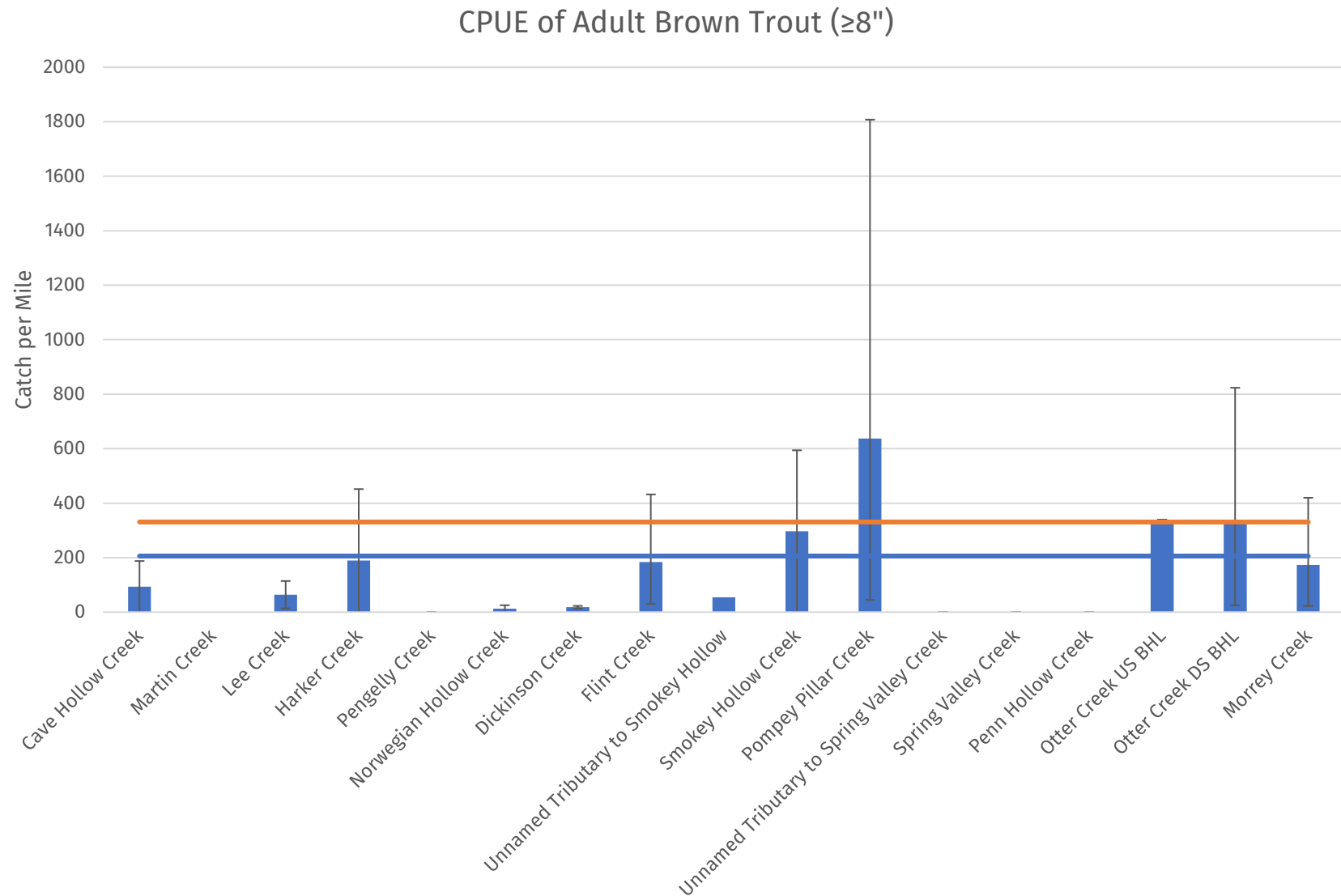


Figure 8. CPUE of adult brown trout in the Otter Creek watershed. The blue line refers to the Driftless Area median while the orange line refers to the statewide median.

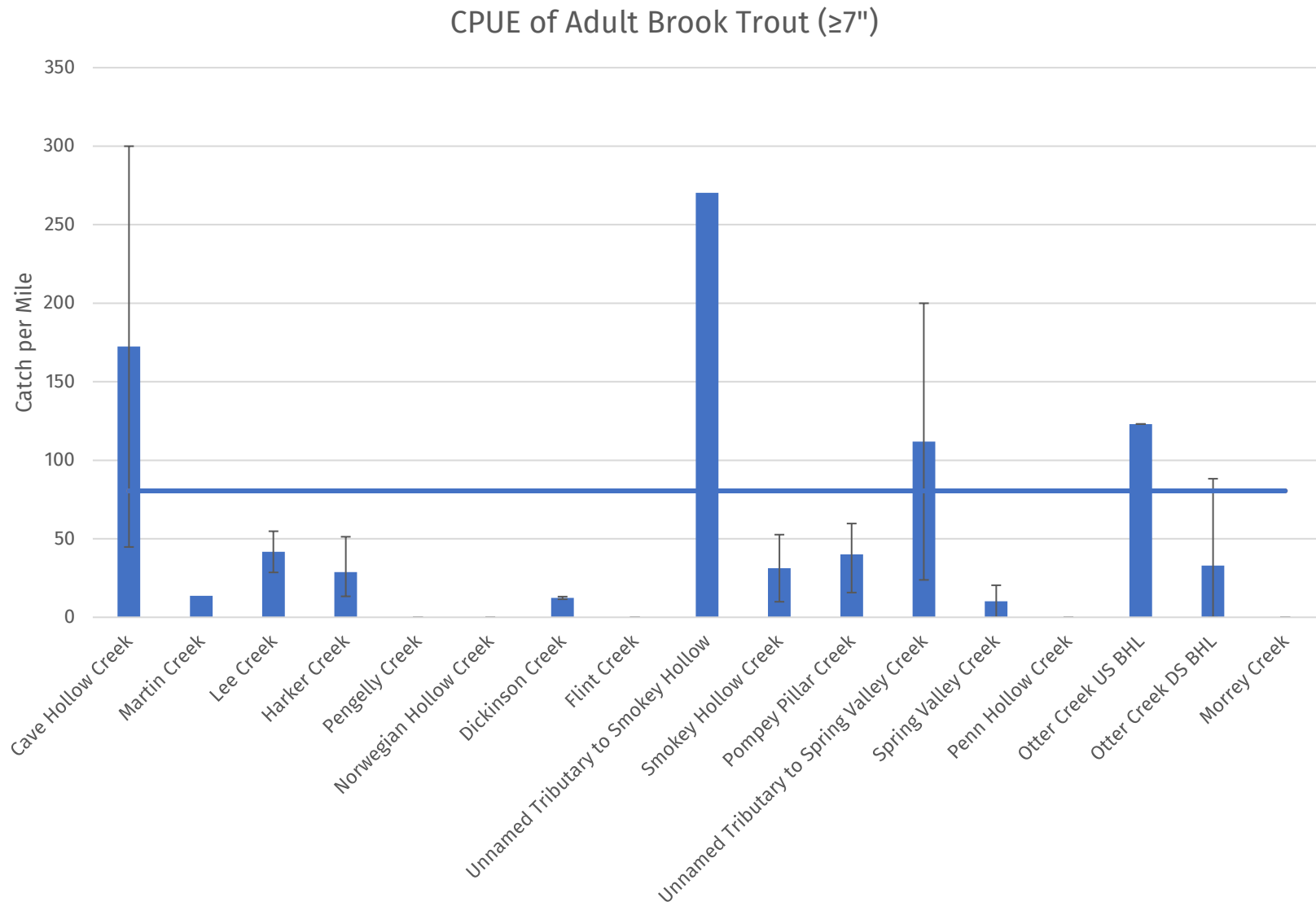


Figure 9. CPUE of adult brook trout in the Otter Creek watershed. The blue line represents both the Driftless Area and statewide median values.

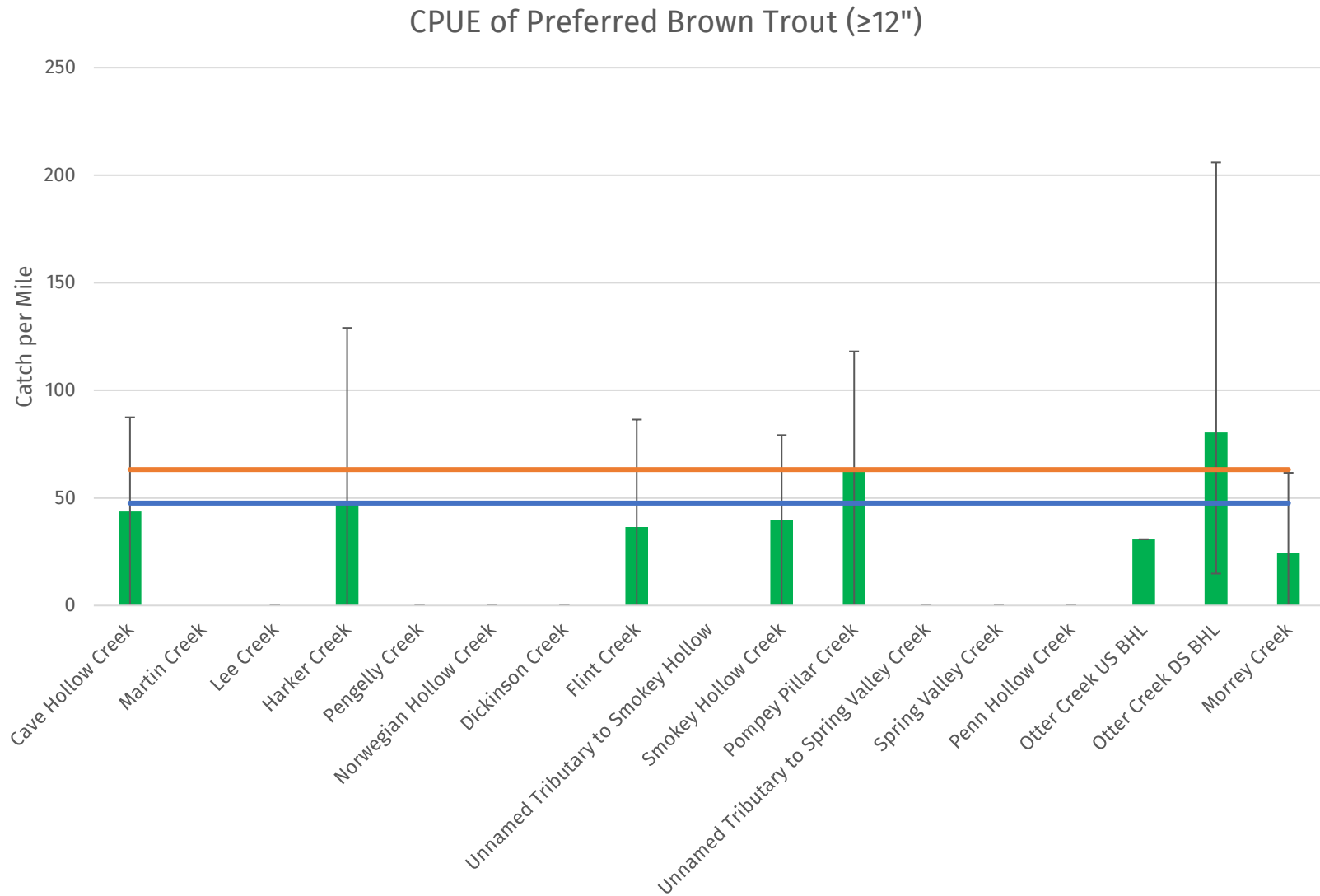


Figure 10. CPUE of preferred size brown trout in the Otter Creek watershed. The blue line refers to the Driftless Area median while the orange line refers to the statewide median.

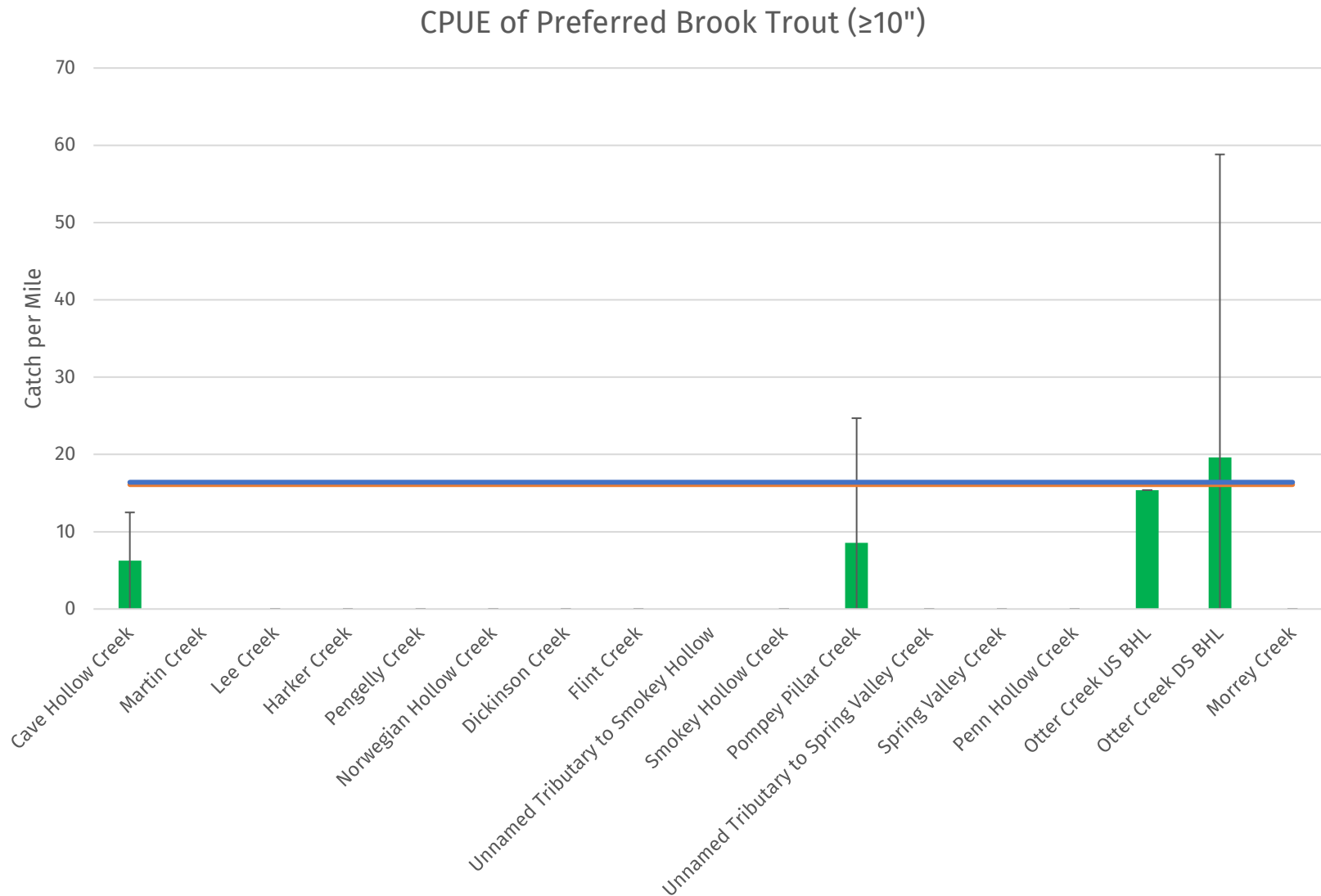


Figure 11. CPUE of preferred size brook trout in the Otter Creek watershed. The blue line refers to the Driftless Area median while the orange line refers to the statewide median.



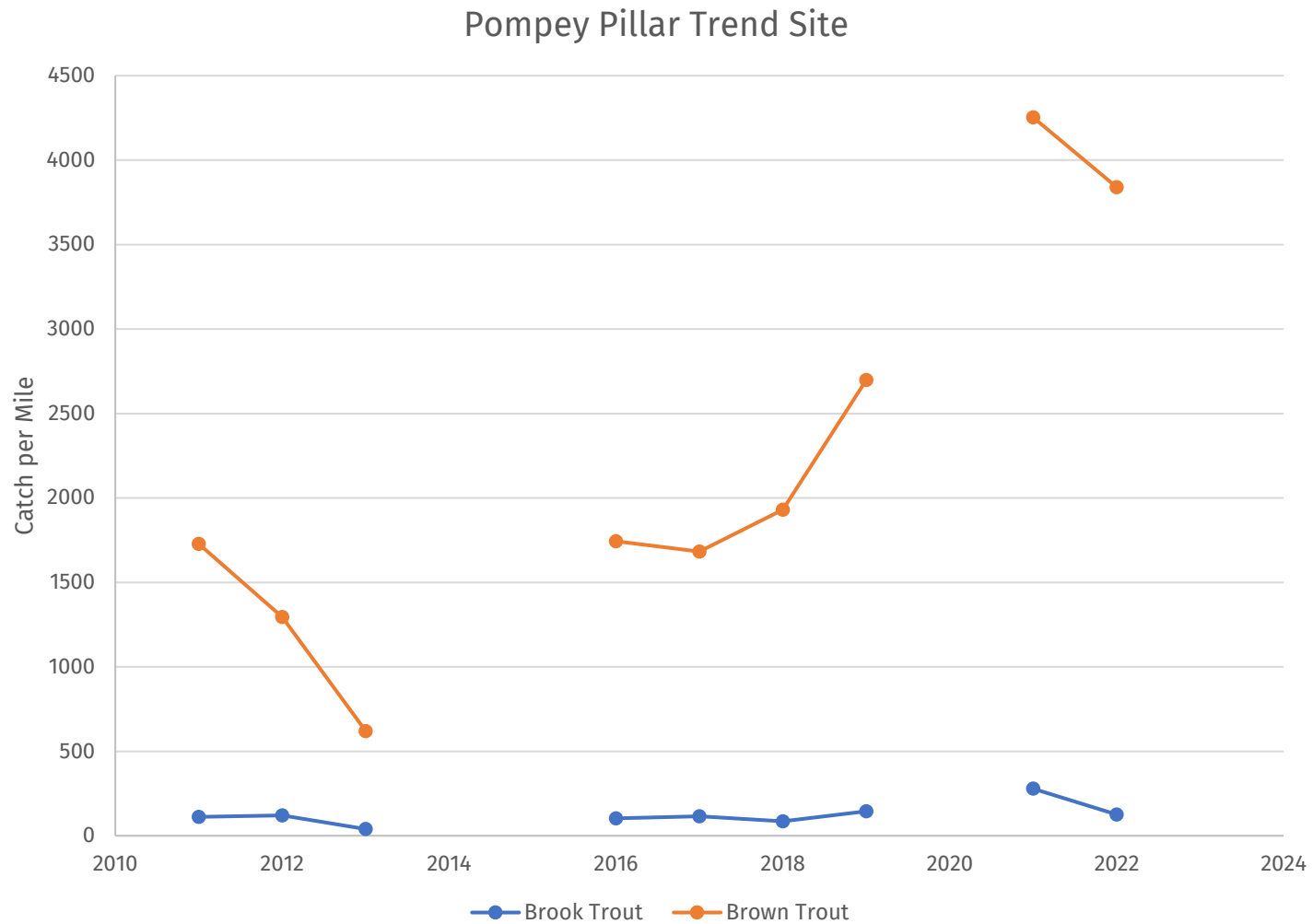


Figure 12. CPUE of total brown and brook trout sampled from 2011-2022 at the Pompey Pillar Creek trend site (Pompey Pillar Station 1 20ft Above Chy I). Surveys were not conducted in 2014, 2015 or 2020.