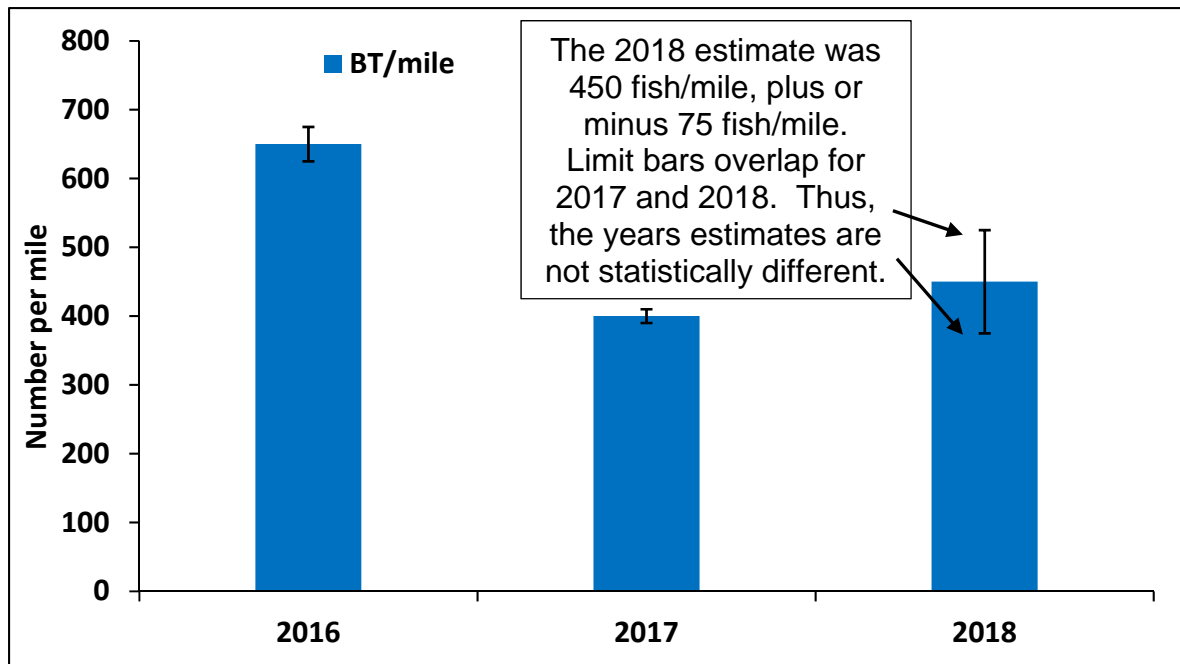


Appendix I - Individual Stream Discussions, Graphs and Photos - 2018

Things to note on individual stream discussions and graphs

1. Adult trout (yearling and older) abundances are based on two electrofishing passes to obtain population estimates for all sites and are reported in fish per mile to account for differing site lengths.
2. Due to much lower capture probability, young-of-year trout reported are only the number of fish actually captured on both electrofishing passes on a per mile basis. Thus, the actual number of young-of-year in the site is likely considerably higher than the number reported here.
3. The vertical scale (Y-axis) varies with most graphs to best emphasize trends for each sampling site.
4. For those interested in the statistics, all adult population graphs include 95% confidence limit bars (finer black lines). The larger bars are the estimated population at the site with finer black lines indicating the “plus or minus” aspect of the estimate (see example below). For many sites, prior to 2016 only one electrofishing pass was done to estimate populations, thus confidence limits could not be developed.



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Allegany County Streams

Spring Mills Creek

One site was sampled on Spring Mills Creek in 2018. This site, located below Cobb Hill Road, had been sampled previously in 2009, 2016 and 2017. The abundance of adult wild brook trout in 2018 (262 fish/mile) was lower than 2016 and 2017, but still higher than the level seen in 2009 (Figure 13). Reproduction of brook trout in 2018 was slightly lower than 2016, but much higher than 2009 and 2017 (Figure 14).

Figure 13. Adult wild brook trout abundance (number/mile) at the site below Cobb Hill Road in Spring Mills Creek in 2009, 2016, 2017 and 2018.

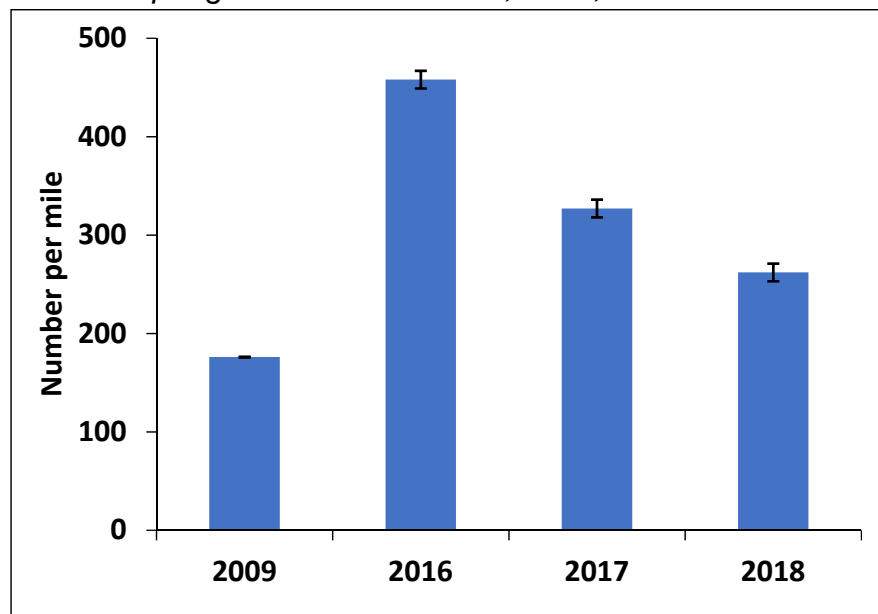
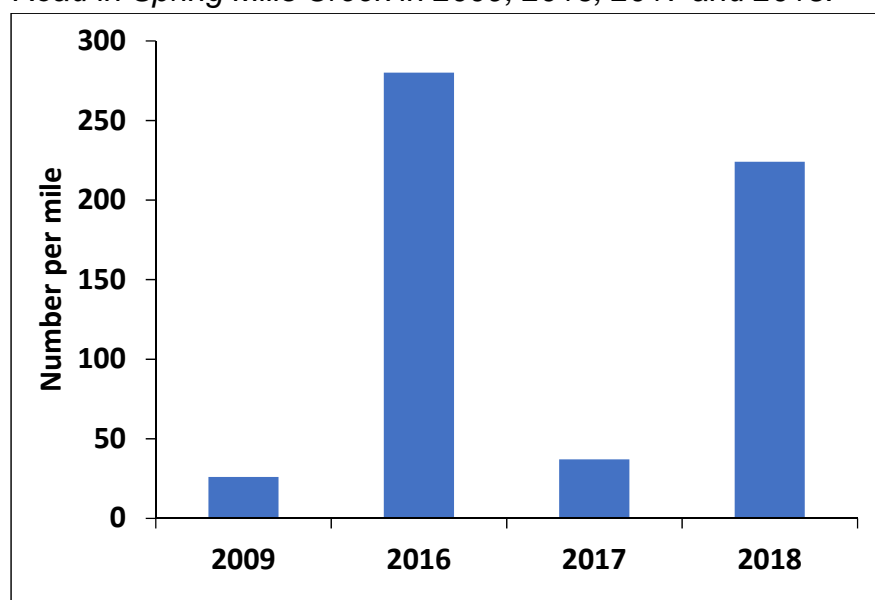


Figure 14. Brook trout young-of-year captured (number/mile) at the site below Cobb Hill Road in Spring Mills Creek in 2009, 2016, 2017 and 2018.



Ford Brook

In 2018, Ford Brook was sampled at one site, located below its junction with the South Branch. This site was previously sampled in 2009, 2016 and 2017. A low number of young-of-year brown trout were captured in 2018 at this site, similar to what we found in 2016 and 2009 (Figure 15). It is likely most reproduction is occurring farther upstream

or in tributaries. Adult wild brown trout abundance (245 fish/mile) was higher in 2018 than we found in 2009 and 2017, but slightly lower than what was found in 2016 (Figure 16).

Figure 15. Brown trout young-of-year captured (number/mile) at the site below the South Branch in Ford Brook in 2009, 2016, 2017 and 2018.

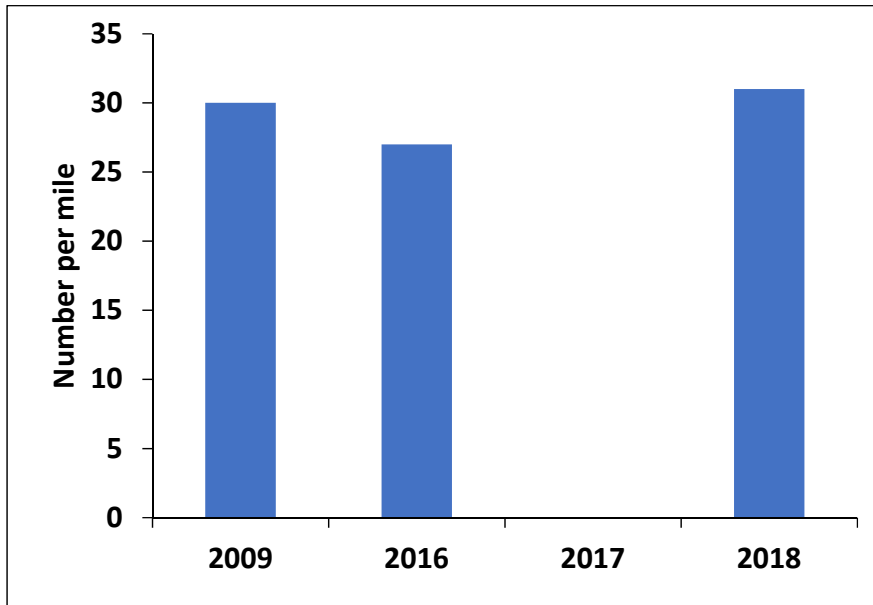
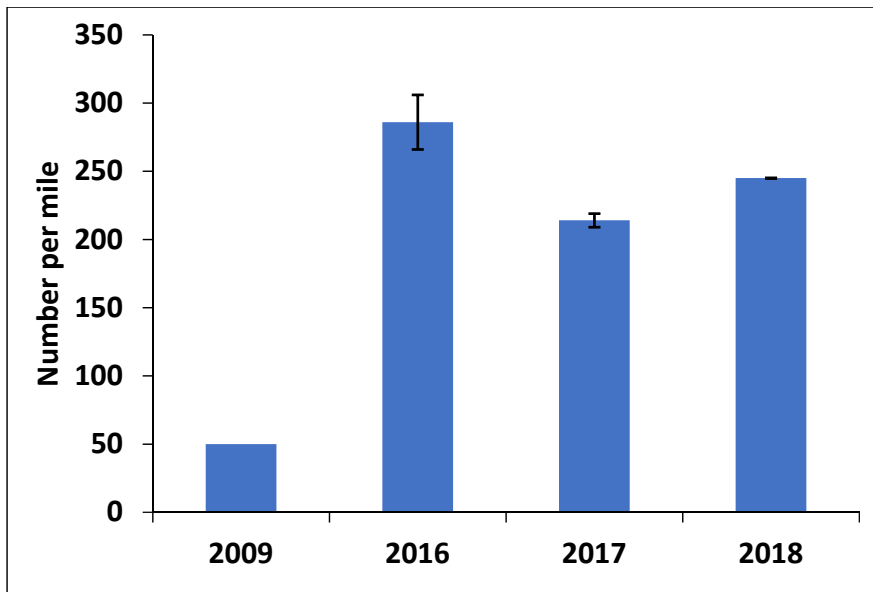


Figure 16. Adult wild brown trout abundance (number/mile) at the site below the South Branch in Ford Brook in 2009, 2016, 2017 and 2018.



Dyke Creek

Dyke Creek, while primarily a stocked trout fishery, does support a moderate number of wild brown and brook trout in a section downstream of the Village of Andover.

We sampled the creek at one site in 2018, located at the Route 417 crossing. This site had also been sampled in 1992, 2005, 2016 and 2017. The density of adult wild brown trout in 2018 (393 fish/mile) was by far the highest we have measured in any sampling year. In 2018, a very low density of adult wild brook trout (14 fish/mile) was much reduced from 2005-2016 sampling (Figure 17). Density of stocked brown trout was also the highest we have measured in all five sampling years (Figure 17). A very low density of both young-of-year brown and brook trout were captured in 2018 (the lowest of all five sampling years) (Figure 18). A 23.5-inch wild brown trout was captured this year in Dyke Creek (Figure 19).

Figure 17. Wild brown trout (BTW), wild brook trout (ST) and stocked brown trout (BTS) abundance (number/mile) at the Route 417 site in Dyke Creek in 1992, 2005, 2016, 2017 and 2018.

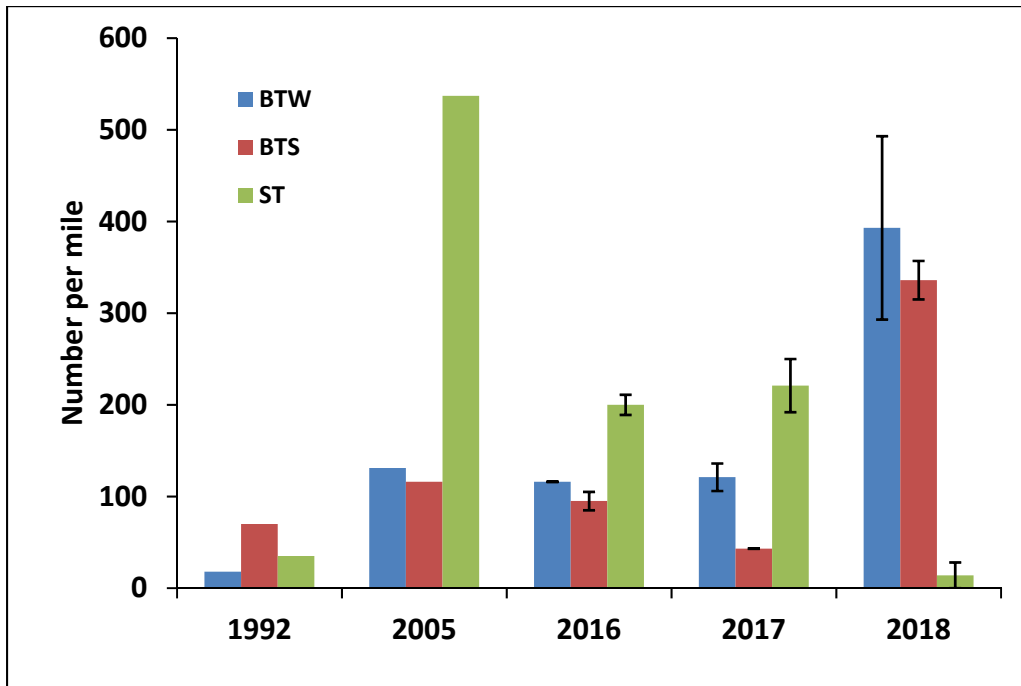


Figure 18. Young-of-year brown trout (BT) and brook trout (ST) captured (number/mile) at the Route 417 site in Dyke Creek in 1992, 2005, 2016, 2017 and 2018.

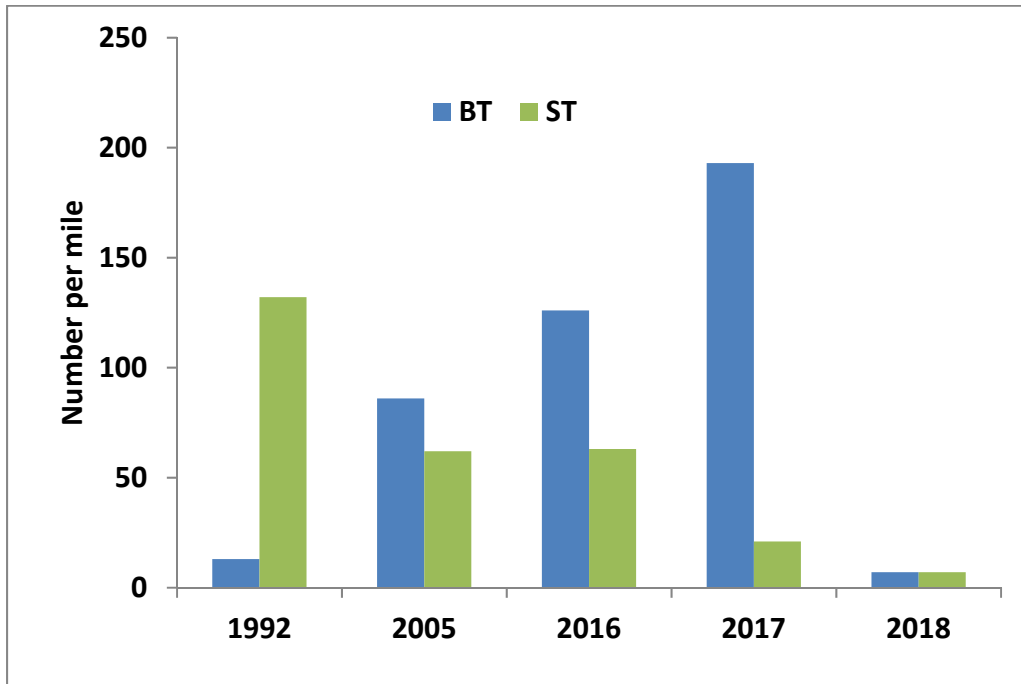


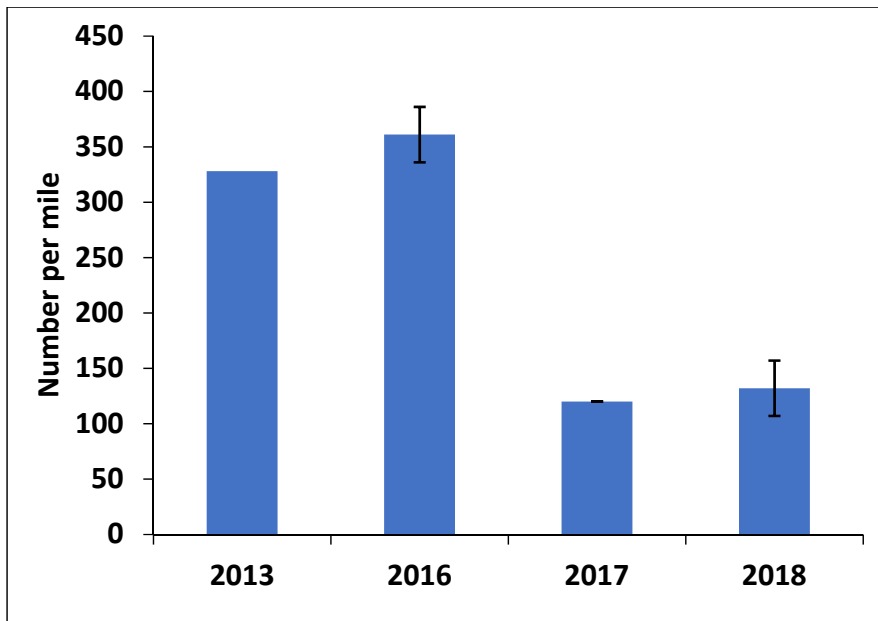
Figure 19. 23.5 inch wild brown trout captured at the Route 417 site in Dyke Creek in 2018.



Chenunda Creek

In 2018, Chenunda Creek was sampled at one location, located upstream of Stannards. This site had also been sampled in 2013, 2016 and 2017. Although Chenunda Creek is stocked each spring with hatchery brown trout, no hatchery trout were captured this year (nor in 2013 and 2016). We found a low density of adult wild brown trout (132 fish/mile) in 2018, considerably lower than we had found in 2013 or 2016 and the same as we found in 2017 (Figure 20). In the first two sampling years, the population included an impressive number of large fish. Thirteen of the 30 fish we captured in 2016 were >14 inches and four fish were >16 inches, with the largest at 19.5 inches. In 2018, two of the 11 wild brown trout we captured were >12 inches and one was larger than 16 inches. It should be noted that the habitat at this site (rip-rap installed by NYSDOT to protect Route 248) is atypical of the stream overall. Poor adult trout habitat is common in many sections of the creek, due to channelization projects done in the 1970s, following Hurricane Agnes. Still, due to the stability of the habitat at this site, it makes a good year to year population comparison site. No young-of-year brown trout were captured in any of the four years at this site, with reproduction mainly occurring in tributaries.

Figure 20. Wild brown trout abundance (number/mile) at the site above Dutch Hill Road in Chenunda Creek in 2013, 2016, 2017 and 2018.



Orebed Creek

In 2018, Orebed Creek was sampled at two locations, one upstream of Graves Road and one approximately 0.5 miles below the PA state line. These sites had also been sampled in 1989, 1999, 2006 and 2017. At both sites in 2018 we found a moderate abundance of adult wild brook trout (242-474 fish/mile). At the lower site this value was the lowest of all five sampling years (following the highest value being seen 2017) (Figure

21). At the upper site, we also saw the lowest adult trout abundance in 2018, with each year since 1999 showing a decline (Figure 21). As was found in 2006 and 2017, low numbers of young-of-year brook trout were captured at both sites in 2018, especially compared with 1999 (Figure 22). Boom and bust patterns of reproduction and resultant adult populations are not atypical for wild brook trout populations in small headwater streams.

Figure 21. Adult wild brook trout abundance (number/mile) in Orebed Creek at the lower (blue bars) and upper (red bars) sampling sites in 1989, 1999, 2006, 2017 and 2018.

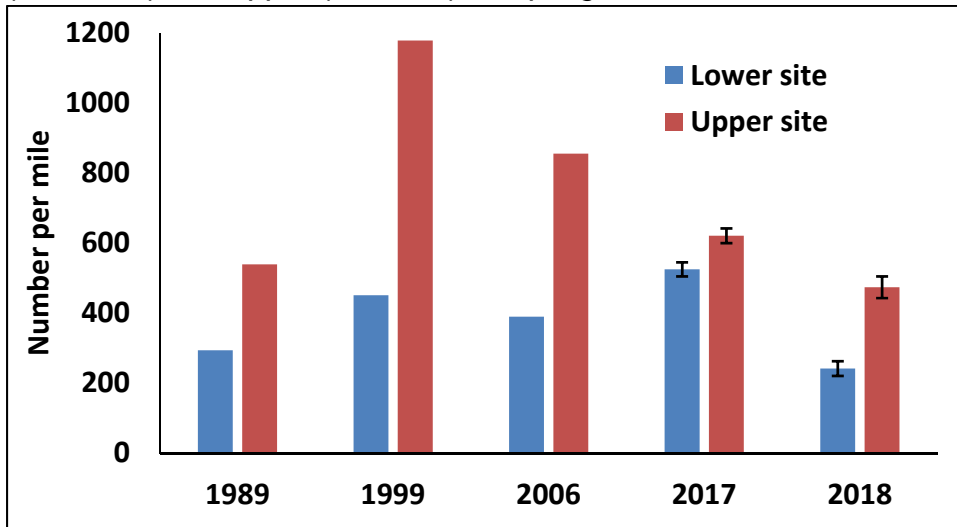
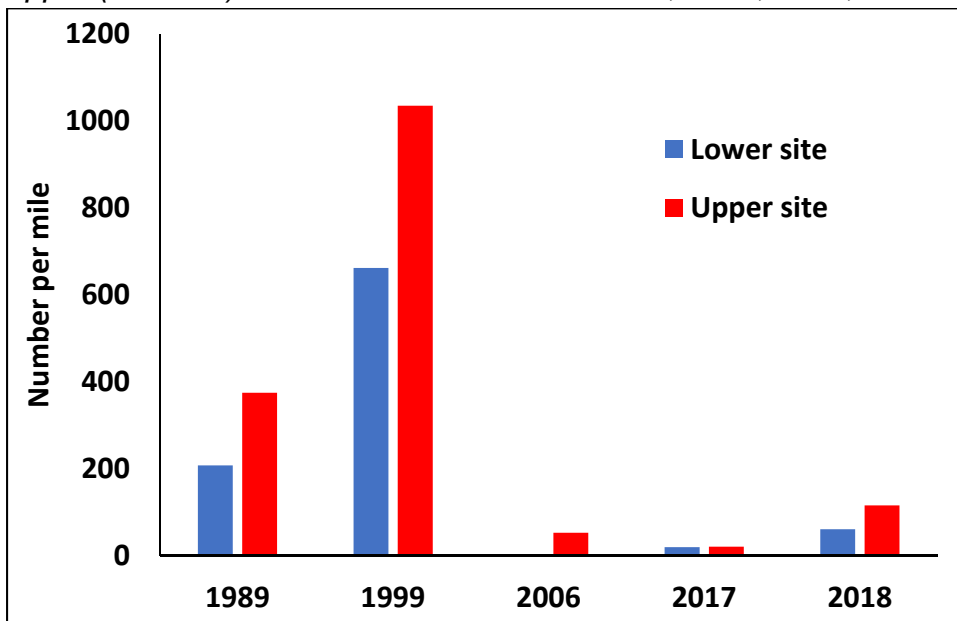


Figure 22. Brook trout young-of-year captured (number/mile) at the lower (blue bars) and upper (red bars) sites in Orebed Creek in 1989, 1999, 2006, 2017 and 2018.



Cattaraugus County Streams

Elm Creek

Elm Creek was sampled at one site, located above Weeden Road in 2018. This site had previously been sampled in 1991, 1997, 2000, 2003, 2008, 2013, 2016 and 2017. In both 2016 and 2017, the adult wild brown trout abundance matched the highest in any of the sampling years, however in 2018 we observed a sharp drop (764 fish/mile) (Figure 23). Some of this reduction may have been due to poor reproduction in 2017, resulting in fewer yearlings in 2018. Three fish >16 inches were captured in 2018 with the largest being 17.4 inches. Reproduction of brown trout again appeared to be poor in 2018 (Figure 24).

Figure 23. Adult wild brown trout abundance (number/mile) at the Weeden Road site in Elm Creek in 1991, 1997, 2000, 2003, 2008, 2013, 2016, 2017 and 2018.

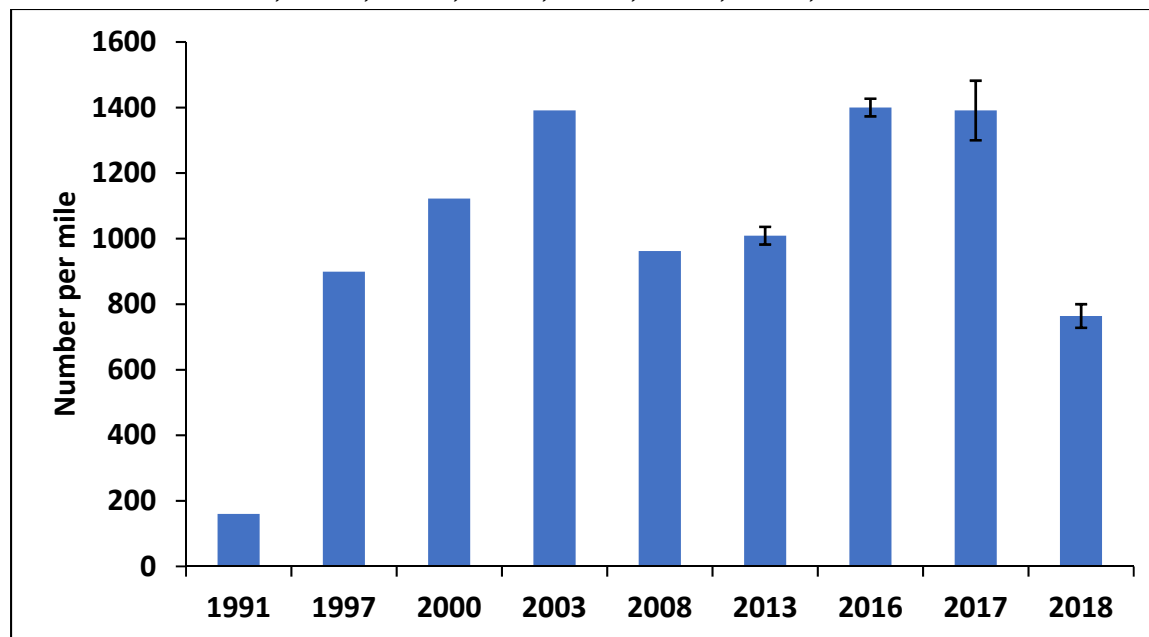
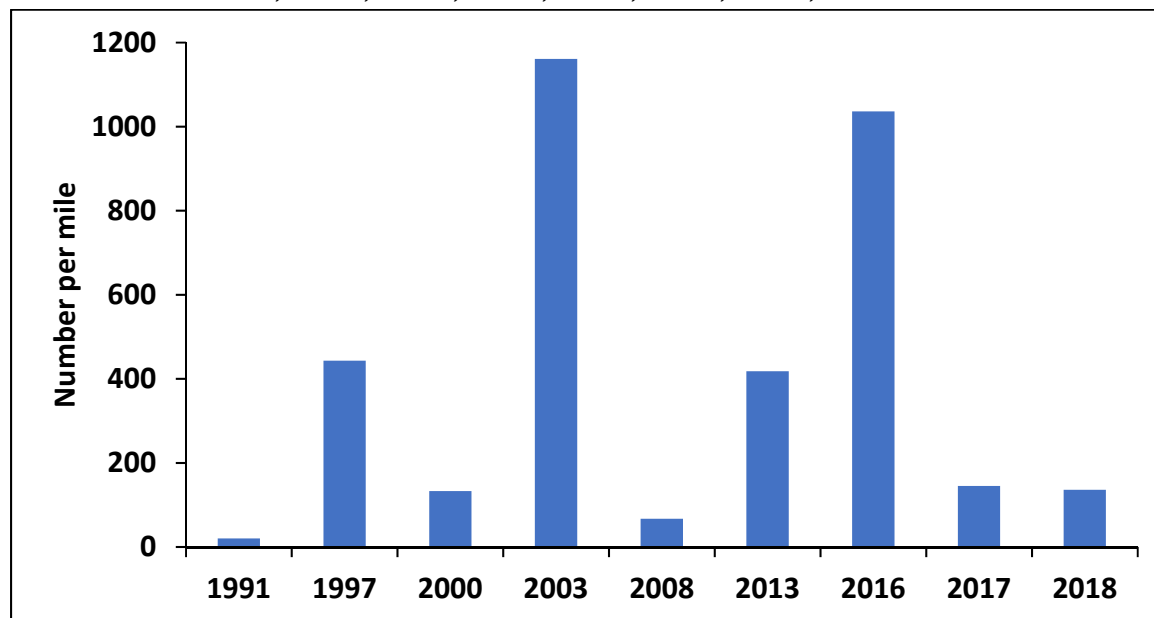


Figure 24. Brown trout young-of-year captured (number/mile) at the Weeden Road site in Elm Creek in 1991, 1997, 2000, 2003, 2008, 2013, 2016, 2017 and 2018.



The Ram

This tributary of Elm Creek, located in East Randolph, was sampled at one site this year, above Mill Street. It had also been sampled in 1992, 1997, 2000, 2003, 2008, 2013, 2016 and, 2017. In 2018, we found the third highest abundance of adult wild brown trout (1,000 fish/mile) in our nine survey years, however it was lower than we found in 2016 and 2017 (Figure 25). As with Elm Creek, some of this decline may have been the result of poor reproduction in 2017, resulting in fewer yearlings in 2018. The wild brown trout population in The Ram has increased substantially since a large, shallow pond in the upper end of The Ram was drained in 1998. This pond had been substantially increasing water temperatures to the detriment of trout. It is not clear why the adult trout population had increased so much in 2016 and 2017 over 2003-2013 values, as habitat and water quality appeared to be consistent between surveys. Four fish >16 inches were captured in 2018 with the largest being 19.8 inches. This fish was the same individual captured at this site in 2016 and 2017 (based on its unique spotting pattern) (Figures 26-28). The moderate number of young-of-year brown captured in 2018 in The Ram was higher than we found in 2017 and similar to what we found in 2008-2016 (Figure 29).

Figure 25. Adult wild brown trout abundance (number/mile) at the Mill Street site in The Ram in 1992, 1997, 2000, 2003, 2008, 2013, 2016, 2017 and 2018.

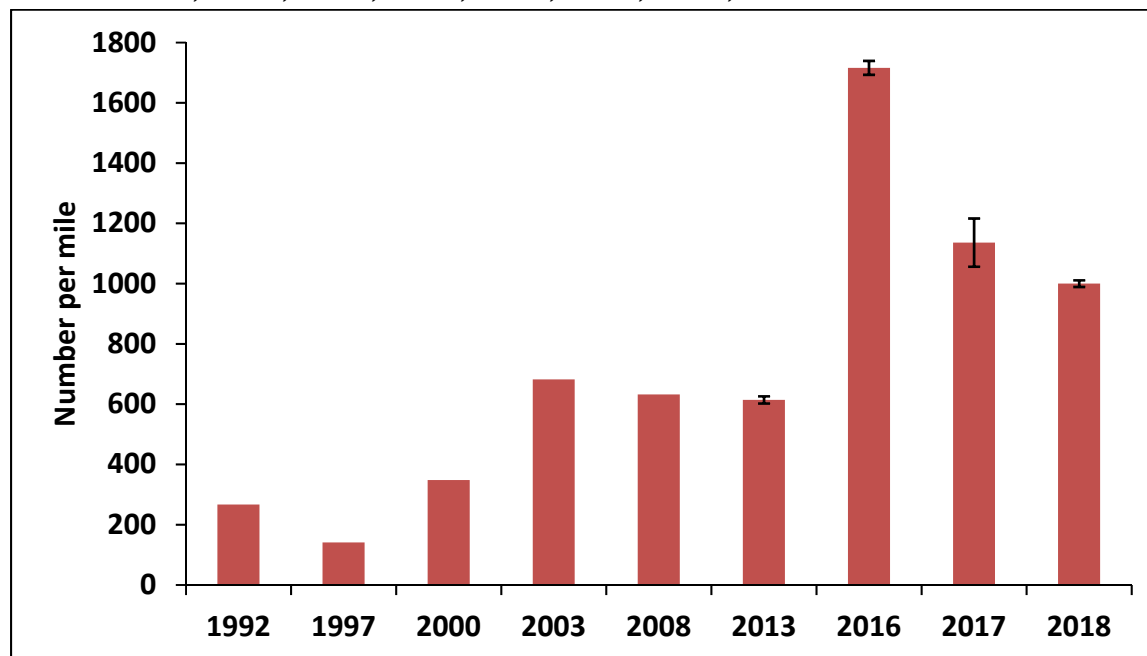


Figure 26. 19.3-inch wild brown trout captured in The Ram in 2016.



Figure 27. Same wild brown trout (19.4-inches) recaptured in The Ram in 2017.

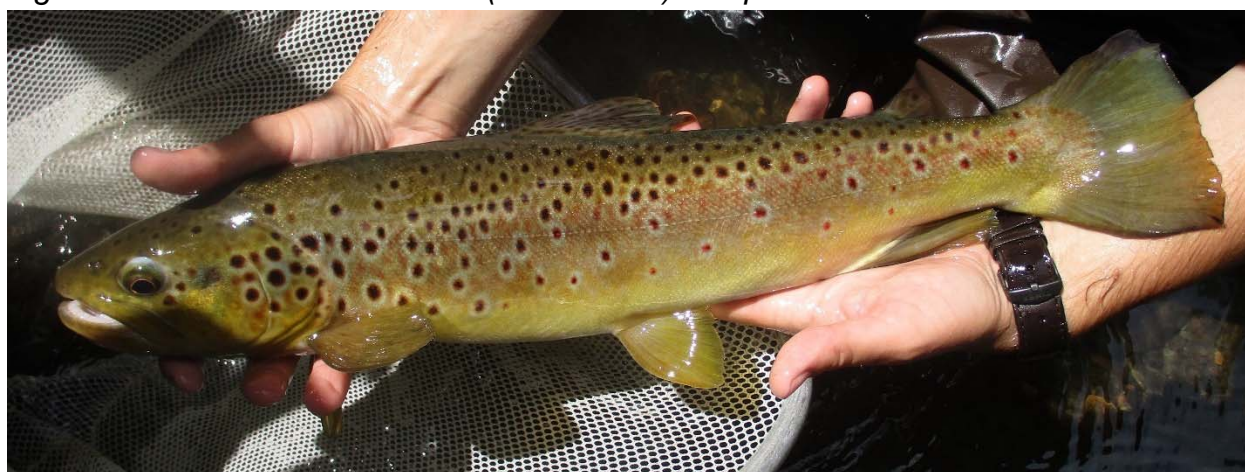
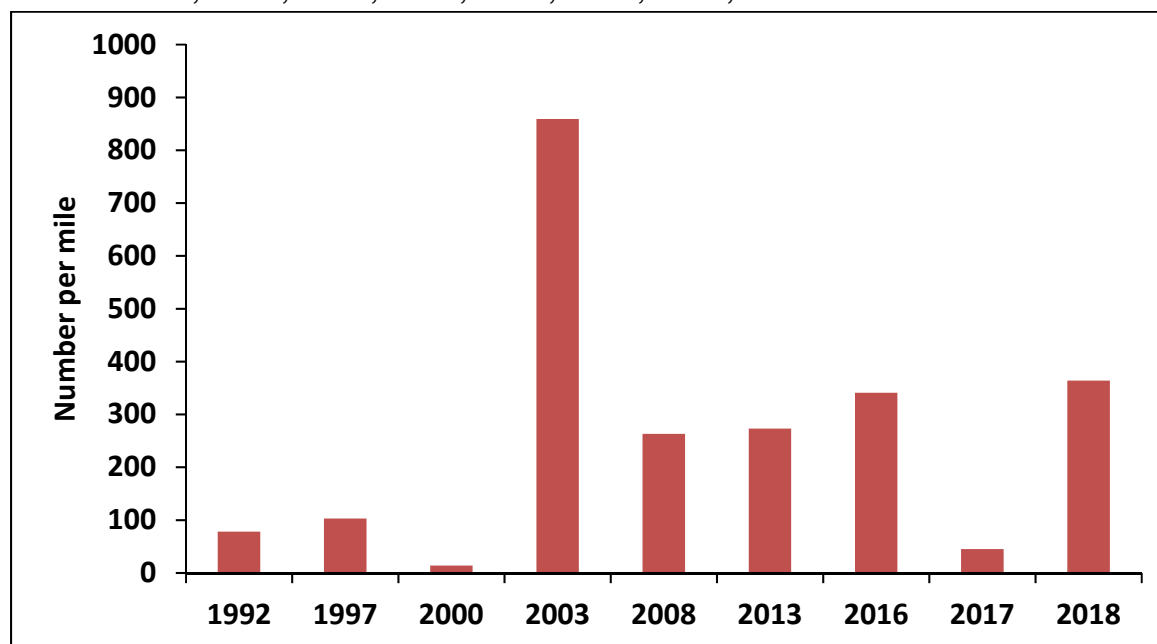


Figure 28. Same wild brown trout (19.8-inches) recaptured in The Ram in 2018.



Figure 29. Brown trout young-of-year captured (number/mile) at the Mill Street site in The Ram in 1992, 1997, 2000, 2003, 2008, 2013, 2016, 2017 and 2018.



Mansfield Creek

Mansfield Creek was sampled at two sites in 2018, duplicating sites sampled in 1992, 1995, 1997, 1998, 1999, 2003, 2008, 2013, 2016 and 2017. Adult wild brown trout abundance at our Eddyville site (311 fish/mile) equaled the lowest measured in our eleven sampling years (Figure 30), while at our site above Maples the abundance (328 fish/mile) was lower than we saw in 2013-2017 (Figure 31). No adult wild rainbow trout were found at the lower site (Figure 30), while at the upper site the abundance was slightly higher than 2016 and 2017, but far below the value in 2013 (Figure 31). Wild rainbow trout were introduced to Mansfield Creek by DEC from 1995-1997. A very low number of young-of-year brown trout were captured at the Eddyville site, while a moderate number (second most in 11 years of sampling) were captured at the site above Maples in 2018 (Figures 32 and 33). No rainbow trout young-of-year were captured at either site. In Mansfield Creek in 2018, the largest brown trout captured was 14.9 inches and the largest rainbow trout was 13.2 inches.

Figure 30. Adult wild brown trout (BT) and wild rainbow trout (RT) abundance (number/mile) at the Eddyville site on Mansfield Creek in 1992, 1995, 1997, 1998, 1999, 2003, 2008, 2013, 2016, 2017 and 2018.

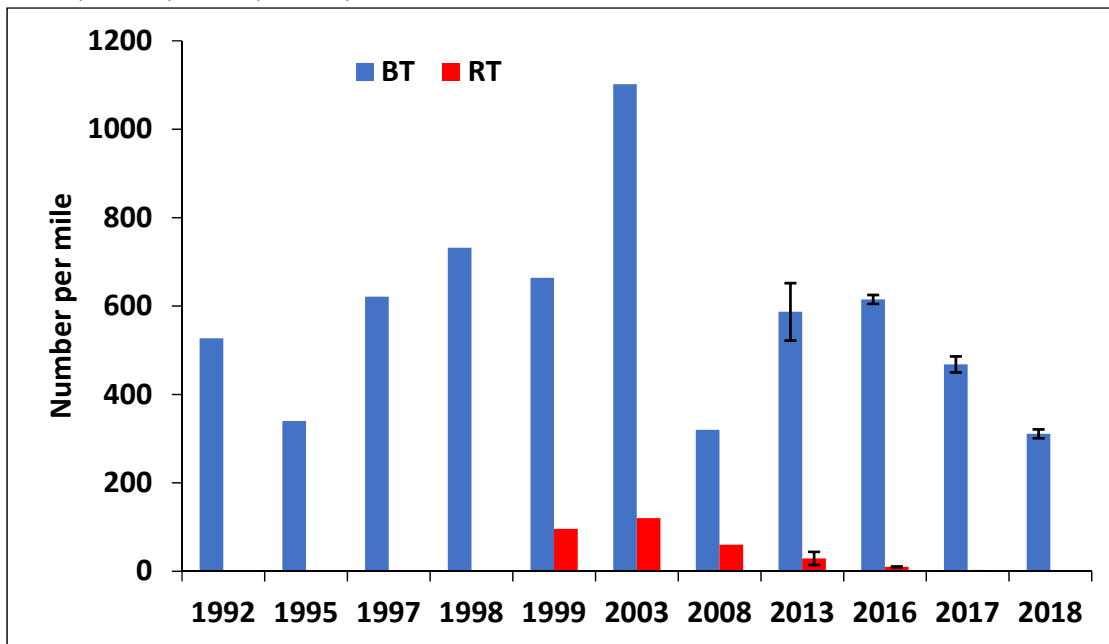


Figure 31. Adult wild brown trout (BT) and wild rainbow trout (RT) abundance (number/mile) at the site above Maples on Mansfield Creek in 1992, 1995, 1997, 1998, 1999, 2003, 2008, 2013, 2016, 2017 and 2018.

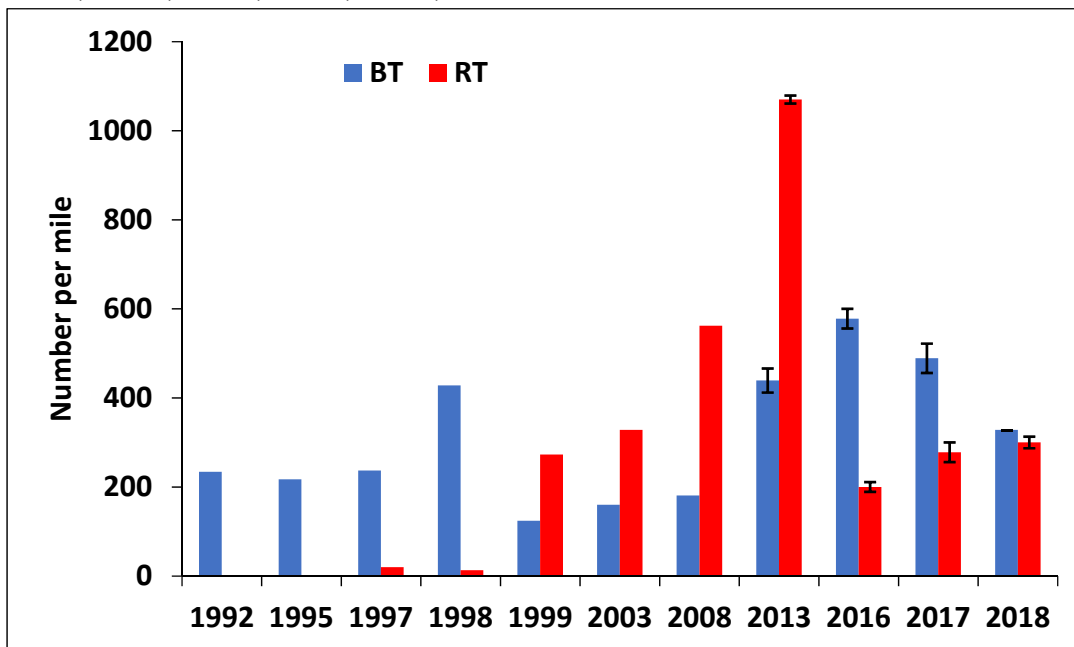


Figure 32. Brown trout (BT) and rainbow trout (RT) young-of-year captured (number/mile) at the Eddyville site on Mansfield Creek in 1992, 1995, 1997, 1998, 1999, 2003, 2008, 2013, 2016, 2017 and 2018.

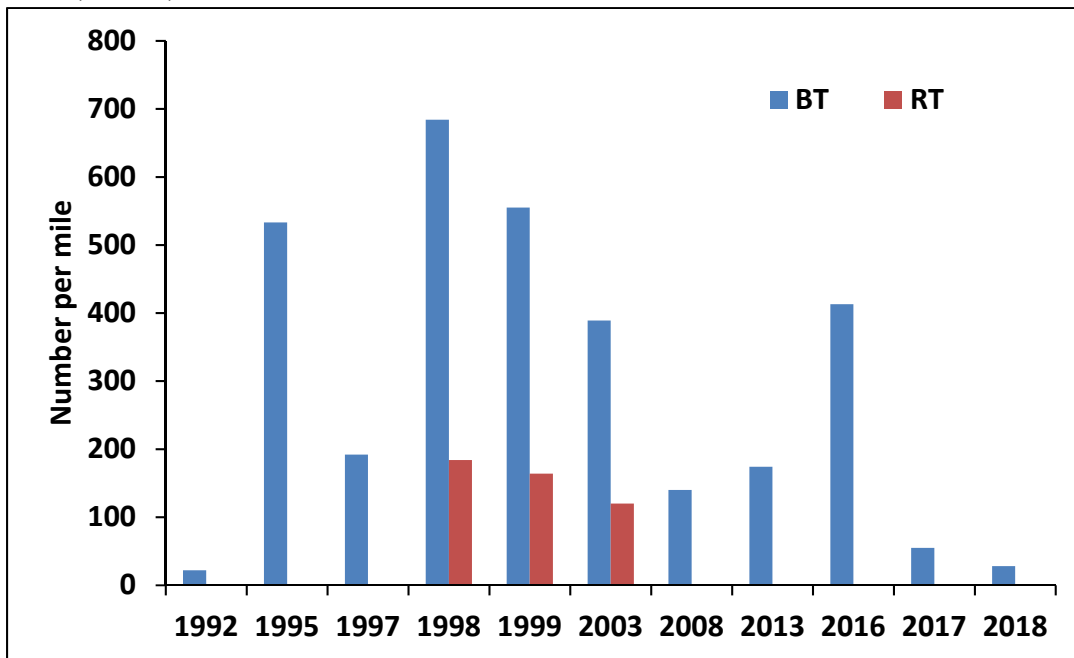
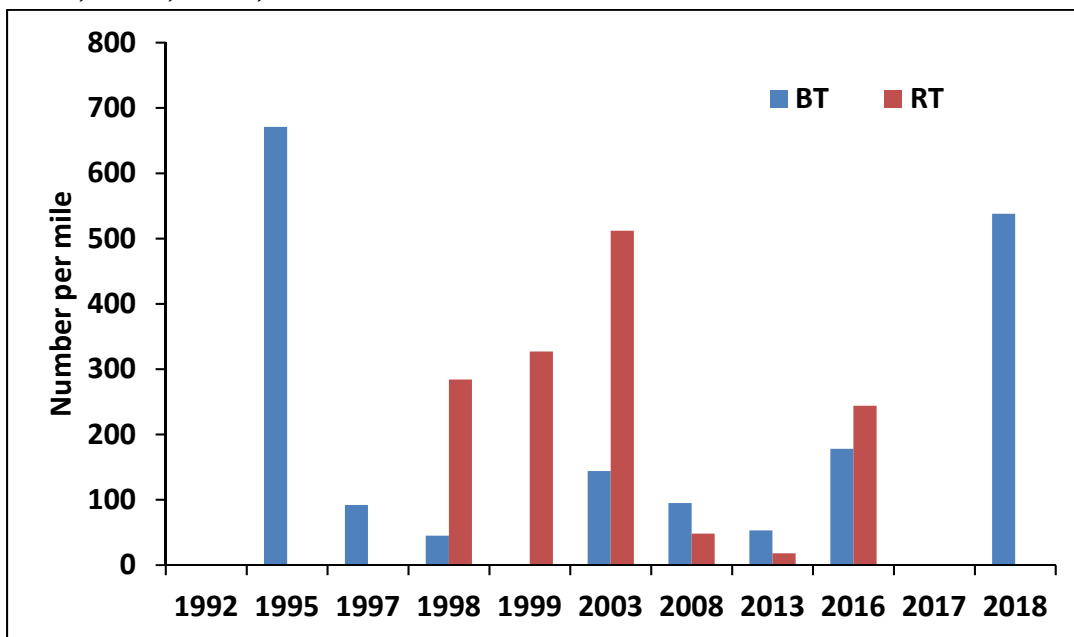


Figure 33. Brown trout (BT) and rainbow trout (RT) young-of-year captured (number/mile) at the site above Maples on Mansfield Creek in 1992, 1995, 1997, 1998, 1999, 2003, 2008, 2013, 2016, 2017 and 2018.



Lime Lake Outlet

Two sites were sampled on Lime Lake Outlet in 2018. These sites had also been sampled every other year from 1992 through 2002 and in 2007, 2014, 2016 and 2017. After reaching the lowest value of any sampling years in 2014, the abundance of adult wild brown trout at our Mill Street site has increased slightly from 2016-2018 (330 fish/mile in 2018) (Figure 34). At our site located just below McKinstry Creek, the abundance of adult wild brown trout in 2018 (575 fish/mile) was lower than 2016 and 2017, but higher than 2007 and 2014 (Figure 35). Two wild brown trout >16 inches were captured in our 2018 survey, with the largest brown trout (18.1 inches) captured at the site below McKinstry Creek. This same fish was also captured in 2016 and 2017, from the same pool (based on unique spotting patterns).

After finding very low abundances of adult wild rainbow trout in 2014 and 2016 in Lime Lake Outlet, the abundance of adult wild rainbow trout, appears to be recovering better than we have seen in some other regional streams. At the Mill Street site, the abundance of adult wild rainbow trout (250 fish/mile) was higher than we found in 2014 and 2016, but still much lower than the peak we saw in 2002 and 2007 (Figure 34). The adult rainbow trout abundance at the site below McKinstry Creek (521 fish/mile) was lower than 2017, but higher than 2016 (Figure 35). The largest rainbow trout captured in this year's survey was 10.8 inches.

After finding very high numbers of young-of-year brown and rainbow trout at both sites in 2016, numbers captured were much lower in 2017. The number of young-of-year brown trout was moderate at both sites, while the number of young-of-year rainbow trout was low at both sites in 2018 (Figures 36 and 37).

Figure 34. Adult wild brown trout (BT) and wild rainbow trout (RT) abundance (number/mile) at the Mill Street site on Lime Lake Outlet in 1992, 1994, 1996, 1998, 2000, 2002, 2007, 2014, 2016, 2017 and 2018.

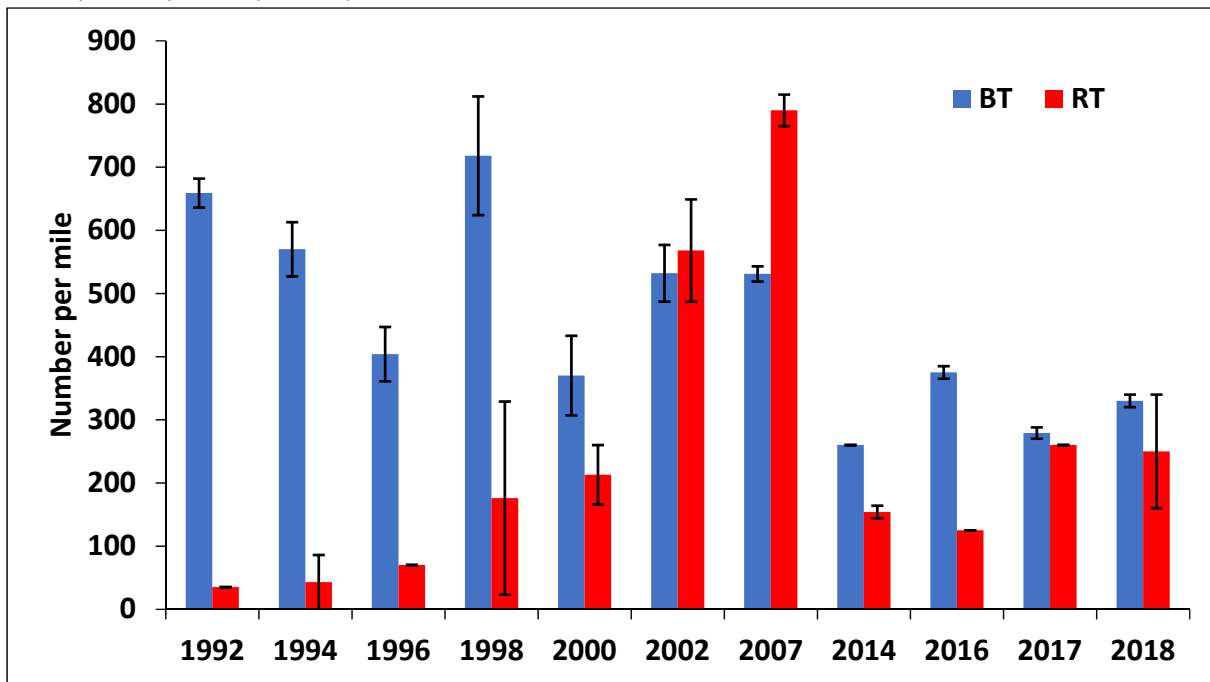


Figure 35. Adult wild brown trout (BT) and wild rainbow trout (RT) abundance (number/mile) at the site below McKinstry Creek on Lime Lake Outlet in 1992, 1994, 1996, 1998, 2000, 2002, 2007, 2014, 2016, 2017 and 2018.

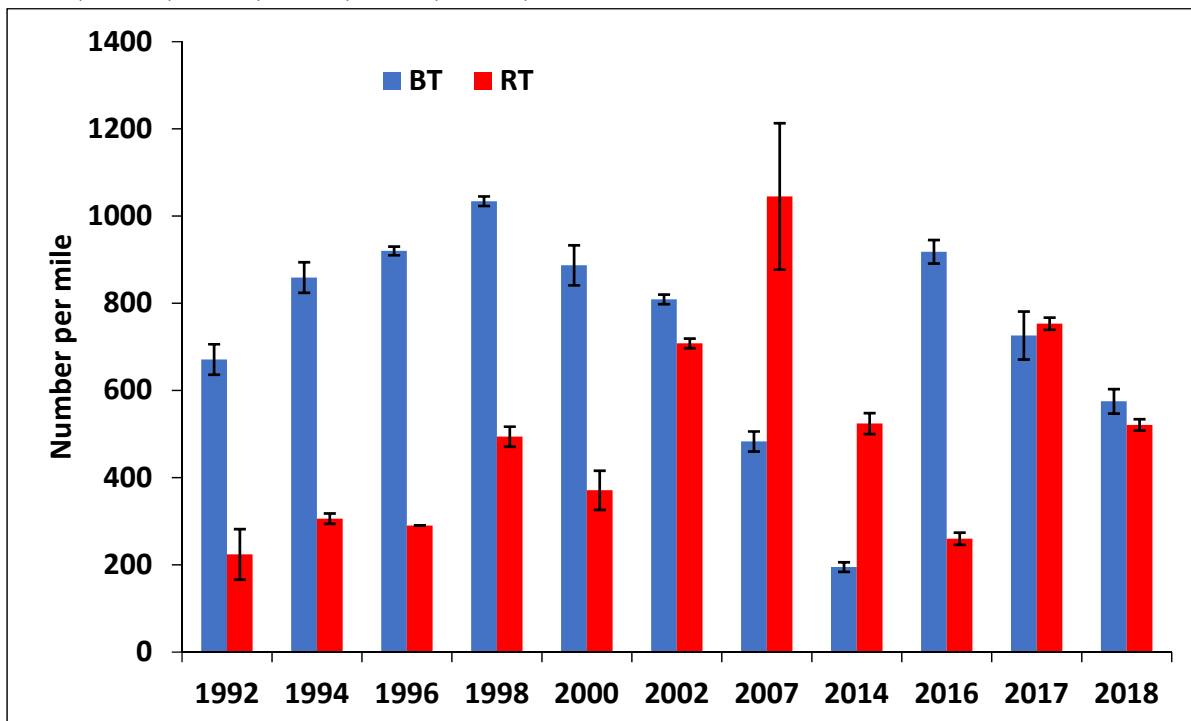


Figure 36. Brown trout (BT) and rainbow trout (RT) young-of-year captured (number/mile) at the Mill Street site on Lime Lake Outlet in 1992, 1994, 1996, 1998, 2000, 2002, 2007, 2014, 2016, 2017 and 2018.

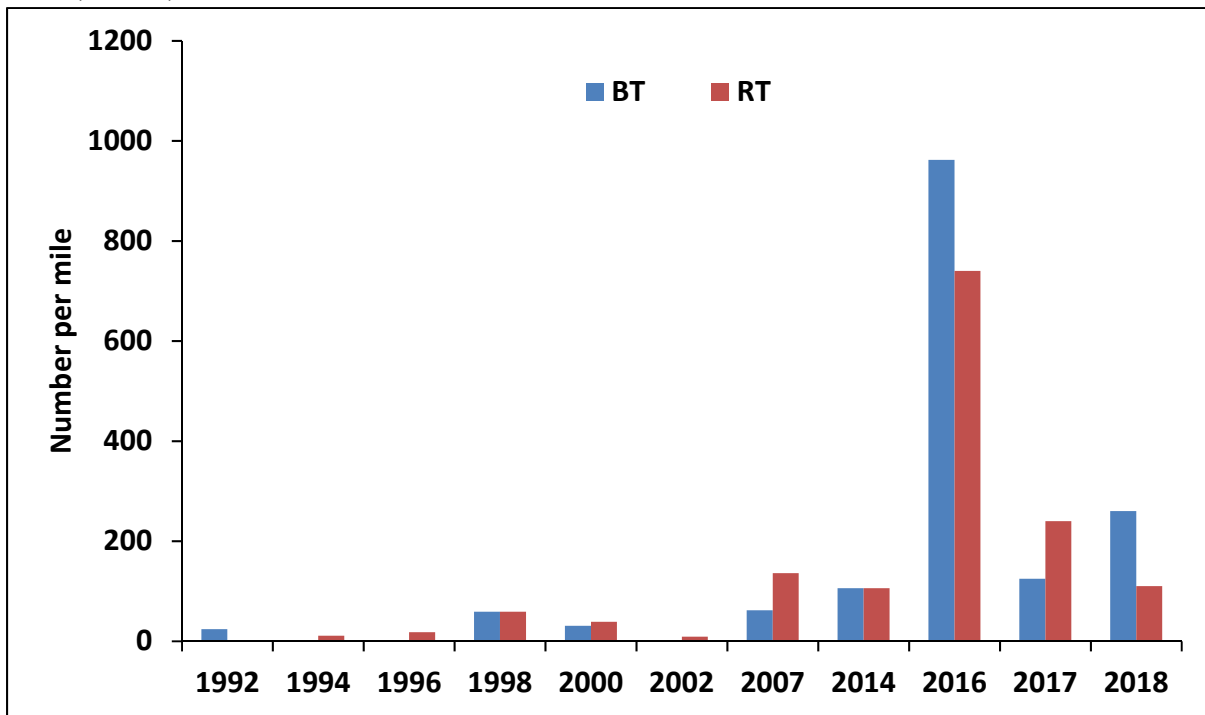
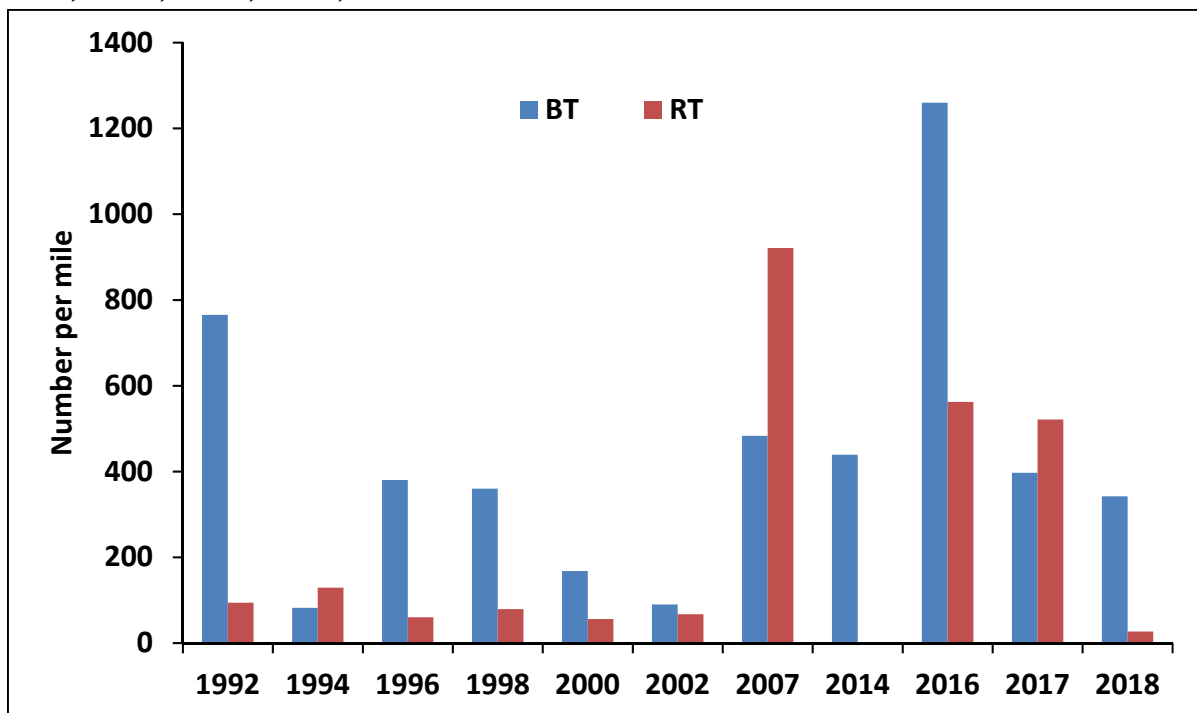


Figure 37. Brown trout (BT) and rainbow trout (RT) young-of-year captured (number/mile) at the site below McKinstry Creek on Lime Lake Outlet in 1992, 1994, 1996, 1998, 2000, 2002, 2007, 2014, 2016, 2017 and 2018.



McKinstry Creek

In 2018, McKinstry Creek was sampled at two sites, one just above its mouth and the other at Gooseneck Road. These sites had also been sampled in 1993, 1995, 1999, 2000, 2002, 2007, 2016 and 2017. At the site above the mouth in 2018, adult wild brown trout abundance was 121 fish/mile, much lower than we found in 2007 - 2017 (Figure 38). Adult brown trout abundance at the Gooseneck Road site has been quite variable over the nine sampling years. The value in 2018 (323 fish/mile) was lower than 2016 and 2017 (Figure 39). Adult wild rainbow trout abundance at the site above the mouth has varied substantially between low and moderate over the sampling years. In 2018 we found the second highest abundance (310 fish/mile) of any sampling year at this site (Figure 38). At the Gooseneck Road site, adult rainbow trout abundance in 2018 (333 fish/mile) was the second highest we have measured in the nine sampling years and much higher than 2016 and 2017 values (Figure 39).

As we found in 2017, the number of young-of-year brown trout captured in 2018 was low at both sites (Figures 40 and 41). At the site above the mouth, we captured a moderate number of young-of-year rainbow trout, while at the Gooseneck Road site we found low numbers (Figures 40 and 41). The largest brown trout captured in 2018 was 12.8 inches. The largest rainbow trout captured was 10.8 inches.

Figure 38. Adult wild brown trout (BT) and wild rainbow trout (RT) abundance (number/mile) at the site above the mouth on McKinstry Creek in 1993, 1995, 1999, 2000, 2002, 2007, 2016, 2017 and 2018.

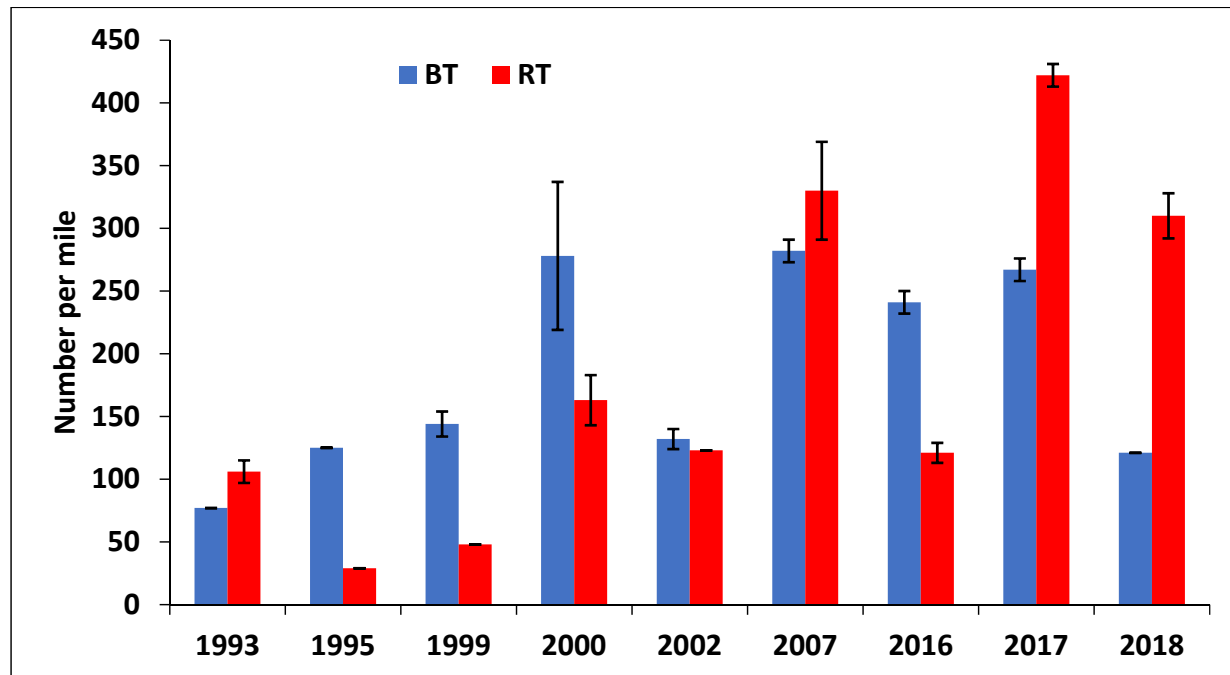


Figure 39. Adult wild brown trout (BT) and wild rainbow trout (RT) abundance (number/mile) at the Gooseneck Road site on McKinstry Creek in 1993, 1995, 1999, 2000, 2002, 2007, 2016, 2017 and 2018.

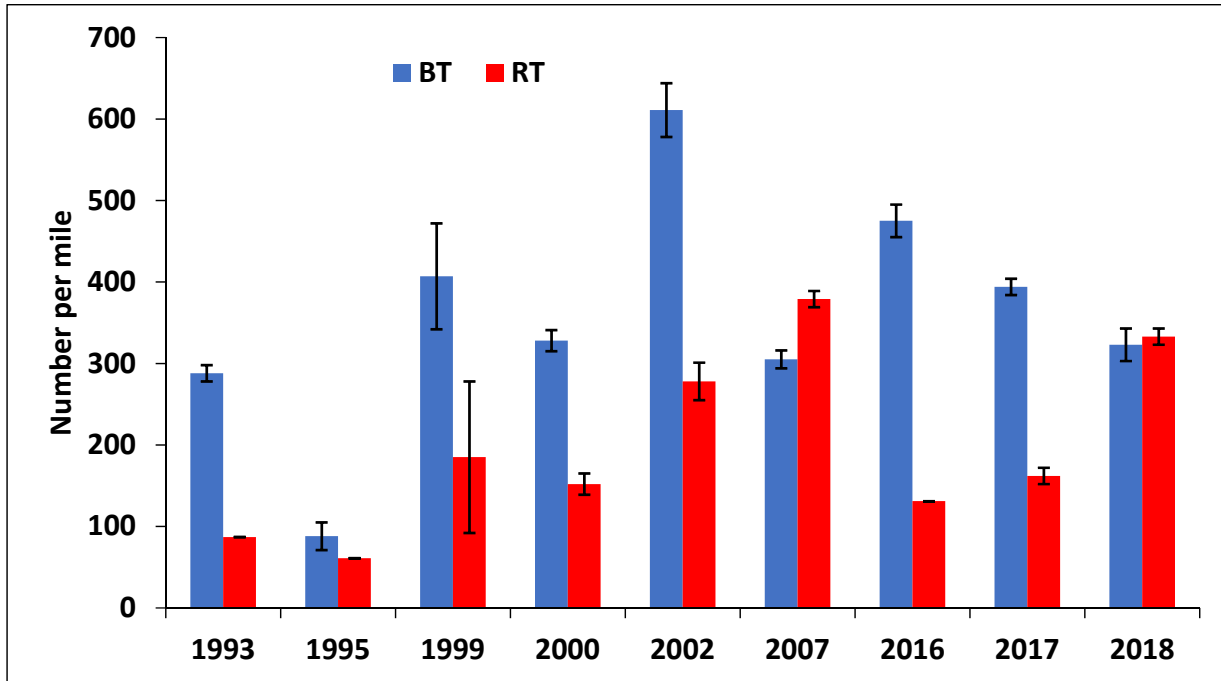


Figure 40. Brown trout (BT) and rainbow trout (RT) young-of-year captured (number/mile) at the site above the mouth on McKinstry Creek in 1993, 1995, 1999, 2000, 2002, 2007, 2016, 2017 and 2018.

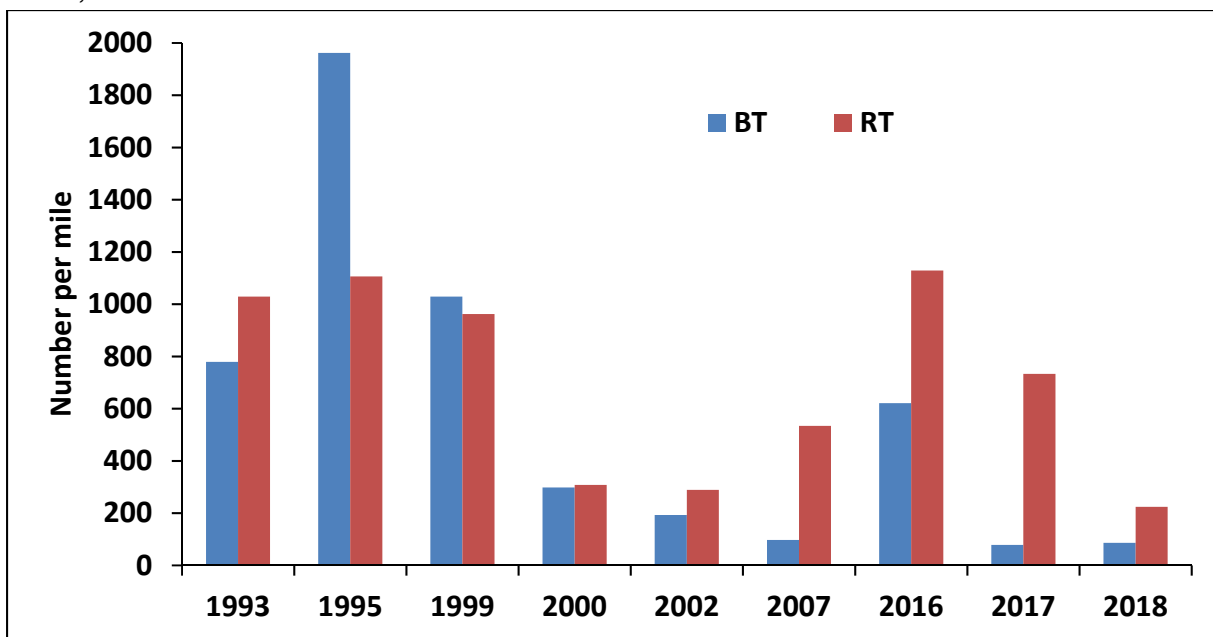
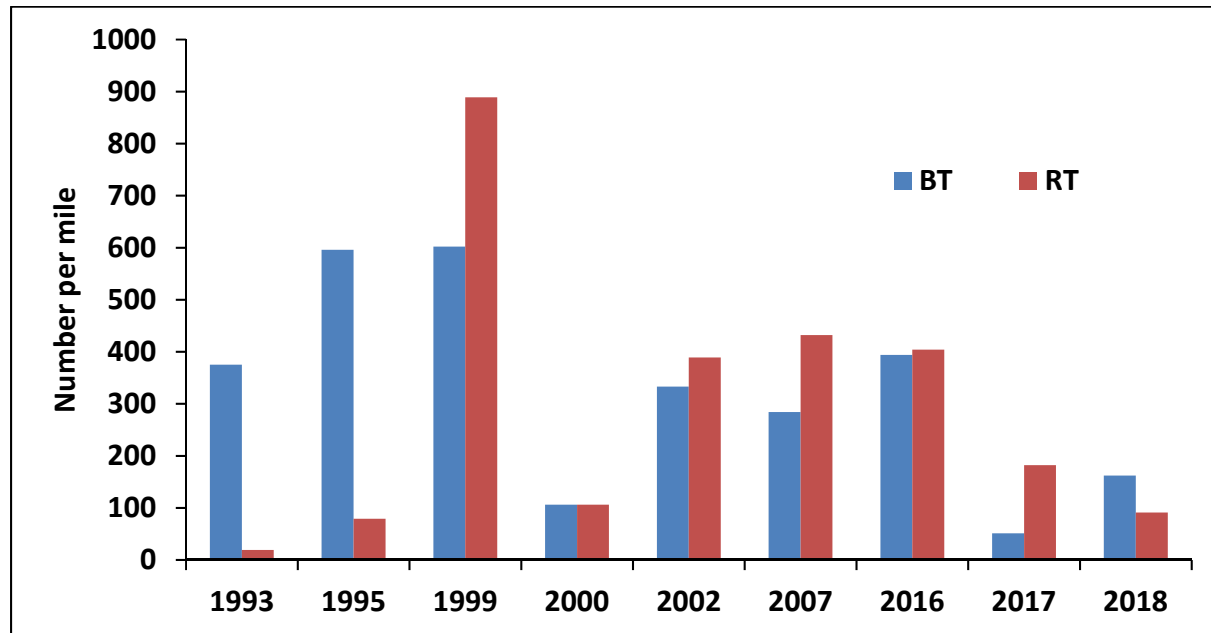


Figure 41. Brown trout (BT) and rainbow trout (RT) young-of-year captured (number/mile) at the Gooseneck Road site on McKinstry Creek in 1993, 1995, 1999, 2000, 2002, 2007, 2016, 2017 and 2018.



Elton Creek

The two sites sampled on Elton Creek in 2018 had been sampled previously in 1991, 2001, 2013, 2016 and 2017 and were located above Cagwin Road and at the Lafarge gravel pit. Adult wild brown trout abundance was low to moderate (137-232 fish/mile) at both sites in 2018 (Figures 42 and 43). The 2018 value was substantially lower than 2017 at the site above Cagwin Road, but similar to the value in 2001-2016 surveys (Figure 42). The adult brown trout value at the Lafarge site was the second lowest we have measured, considerably lower than 2016 and 2017 (Figure 43). We found a very low abundance of adult wild rainbow trout at the site above Cagwin Road in 2018 (32 fish/mile). Adult rainbow trout abundance at this site has varied widely over the survey years with no obvious trend seen (Figure 42). At the Lafarge site, we found a low abundance of adult wild rainbow trout in 2018 (137 fish/mile), which was the second lowest value seen in our six sampling years (Figure 43). Three adult brown trout >16 inches were captured in Elton Creek in 2018, with the largest being 18.3 inches. The largest rainbow trout captured was 11.8 inches.

An extremely low number of young-of-year brown trout and rainbow trout were captured at both sites in 2018 (Figures 44 and 45). With the exception of 2016 for brown trout at the Cagwin Road site, we seldom find many young-of-year in the Elton Creek

itself. It is likely that, even in a good reproduction year, the majority of trout reproduction for Elton Creek is occurring in tributaries.

Figure 42. Adult wild brown trout (BT) and wild rainbow trout (RT) abundance (number/mile) at the site above Cagwin Road in Elton Creek in 1991, 2001, 2013, 2016, 2017 and 2018.

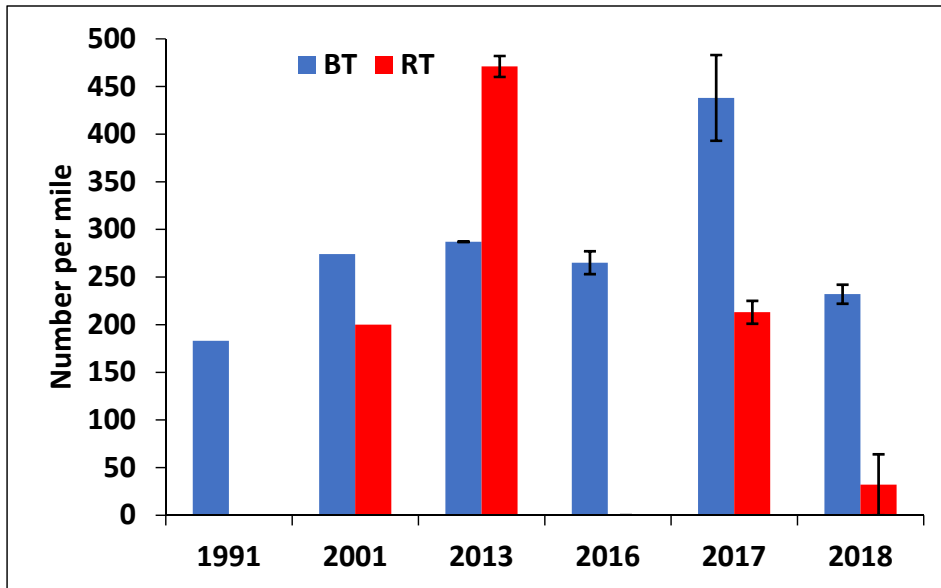


Figure 43. Adult wild brown trout (BT) and wild rainbow trout (RT) abundance (number/mile) at the Lafarge Gravel pit site on Elton Creek in 1991, 2001, 2013, 2016, 2017 and 2018.

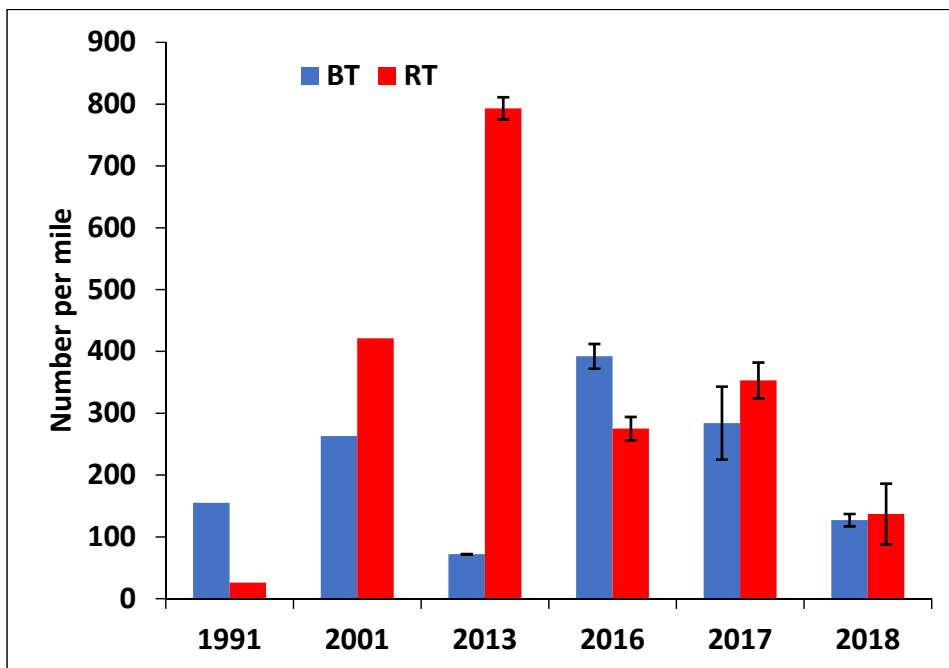


Figure 44. Brown trout (BT) and rainbow trout (RT) young-of-year captured (number/mile) at the site above Cagwin Road in Elton Creek in 1991, 2001, 2013, 2016, 2017 and 2018.

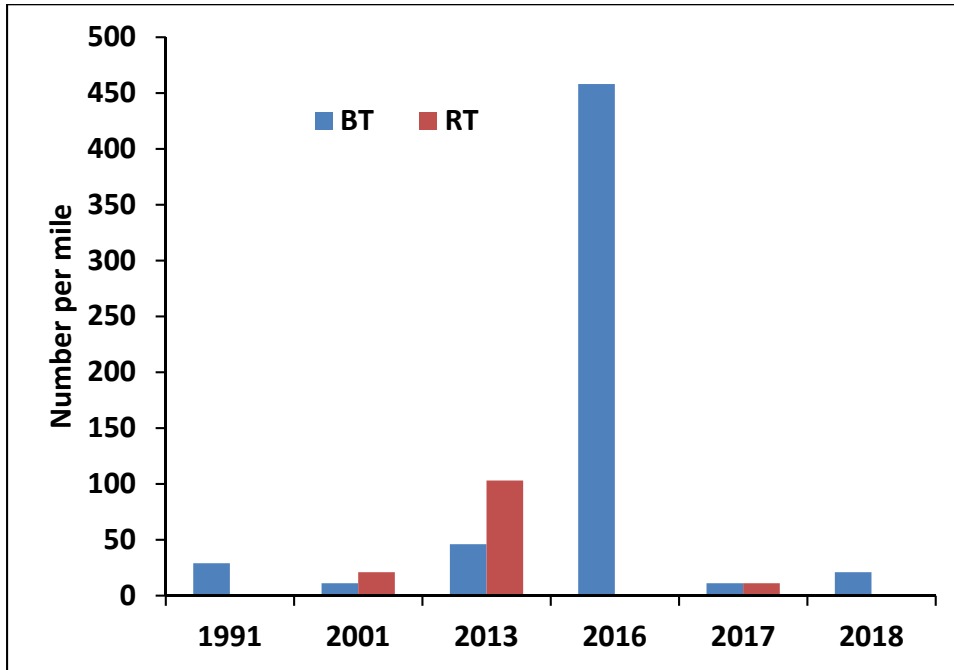
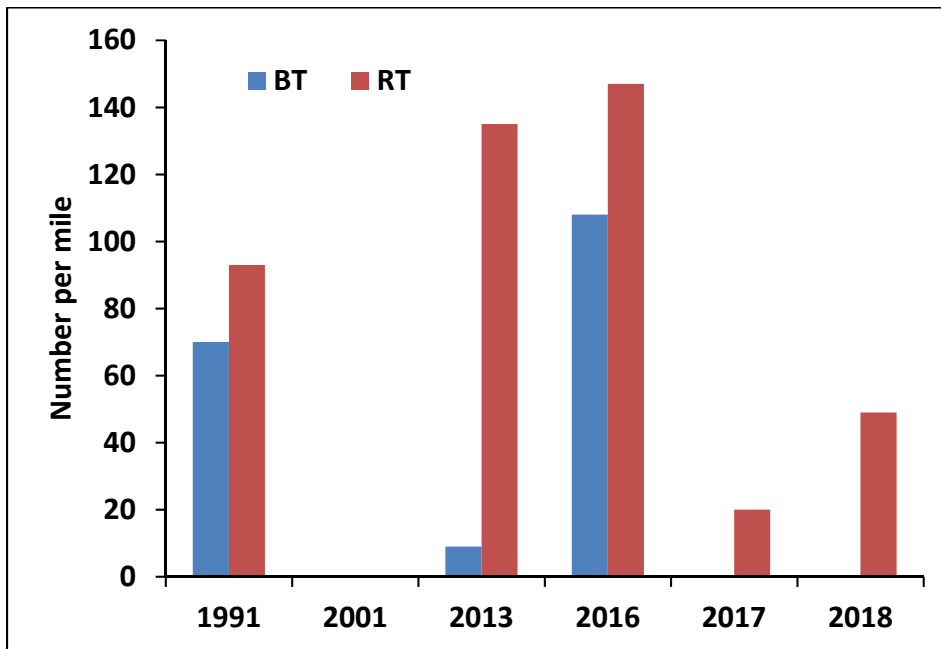


Figure 45. Brown trout (BT) and rainbow trout (RT) young-of-year captured (number/mile) at the Lafarge Gravel pit site on Elton Creek in 1991, 2001, 2013, 2016, 2017 and 2018.



Fenton Creek (Mud Creek)

We sampled Fenton Creek at one site in 2018, located along Route 62 downstream of Leon. This site had previously been sampled in 1992, 2002, 2003, 2007, 2012, 2013, 2016 and 2018. In 2018, we found a similar abundance of adult wild brown trout (746 fish/mile) to 2007, 2012 and 2017 (Figure 46). In 2018, we captured a moderate number of young-of-year brown trout (Figure 47). A very high number of YOY had been captured at the site in 2016. The largest brown trout captured in Fenton Creek in 2018 was 18.8 inches. Wild rainbow trout had been captured at this site in 2002, 2003 and 2007, but not since then. A limited population still exists upstream of Leon, but apparently the decline in adult rainbow trout seen in other streams has also occurred here.

Figure 46. Adult wild brown trout abundance (number/mile) at the site below Leon in Fenton Creek in 1992, 2002, 2003, 2007, 2012, 2013, 2016, 2017 and 2018.

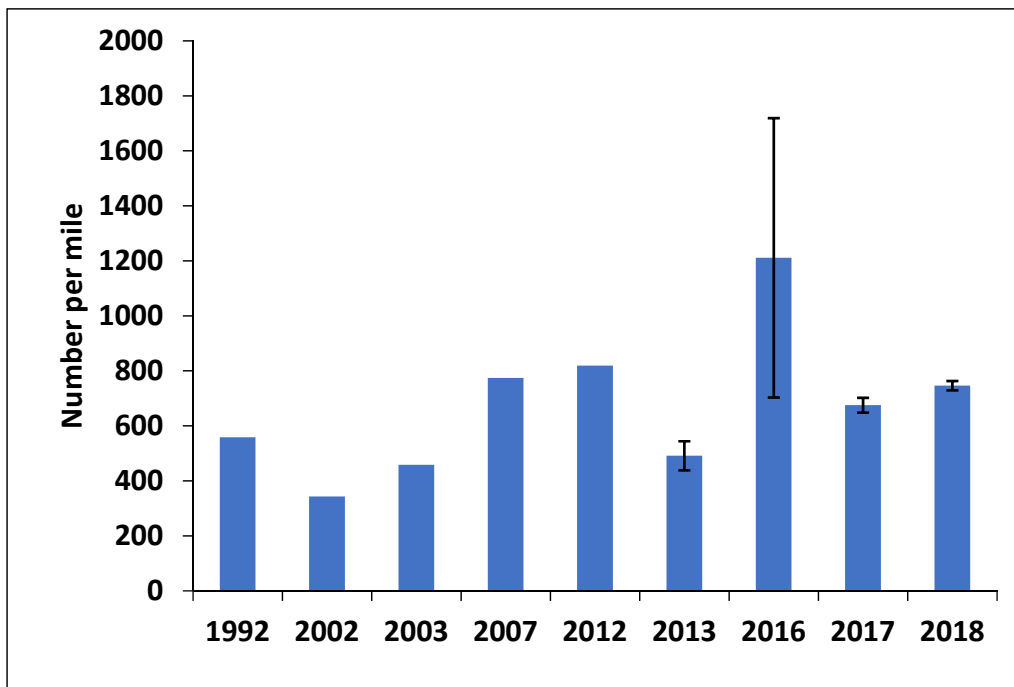
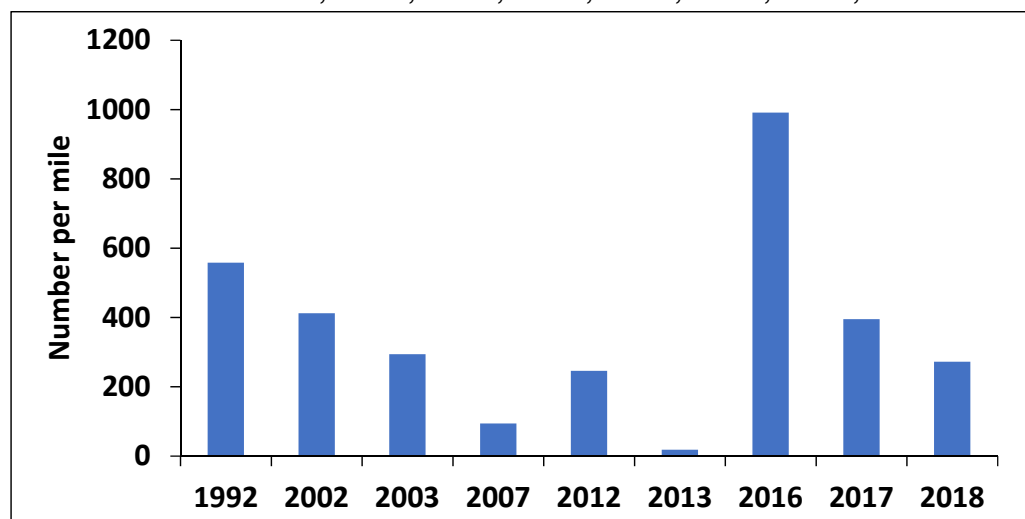


Figure 47. Young-of-year brown trout captured (number/mile) at the site below Leon in Fenton Creek in 1992, 2002, 2003, 2007, 2012, 2013, 2016, 2017 and 2018.



Stoddard Creek

Stoddard Creek was one of two streams in Allegany State Park added to our sampling regime in 2017 to allow for monitoring of wild brook trout populations. This stream was sampled at two sites which had previously been sampled in 1995, 1998, 2008 and 2017. At the lower sampling site in 2018, we found a moderate abundance of adult wild brook trout (237 fish/mile, very similar to 2017 (Figure 48). This was slightly lower than the value found in 1998 and 2008, but higher than 1995. In 2018 at the upper sampling site, we also found a moderate abundance of adult wild brook trout (254 fish/mile). The 2018 value for the upper site was higher than 2008 and 2017, but slightly lower than 1995 and 1998 (Figure 48).

At both sites in 2018, we collected a moderate to high number of young-of-year brook trout/mile (Figure 49). This was much higher than we found in 2008 and 2017. Strong reproduction for brook trout in Stoddard Creek disagreed with findings for other brook trout streams in the region for 2018 where we found low to moderate numbers of young-of-year brook trout.

Figure 48. Adult wild brook trout abundance (number/mi) in Stoddard Creek at the both sampling sites in 1995, 1998, 2008, 2017 and 2018.

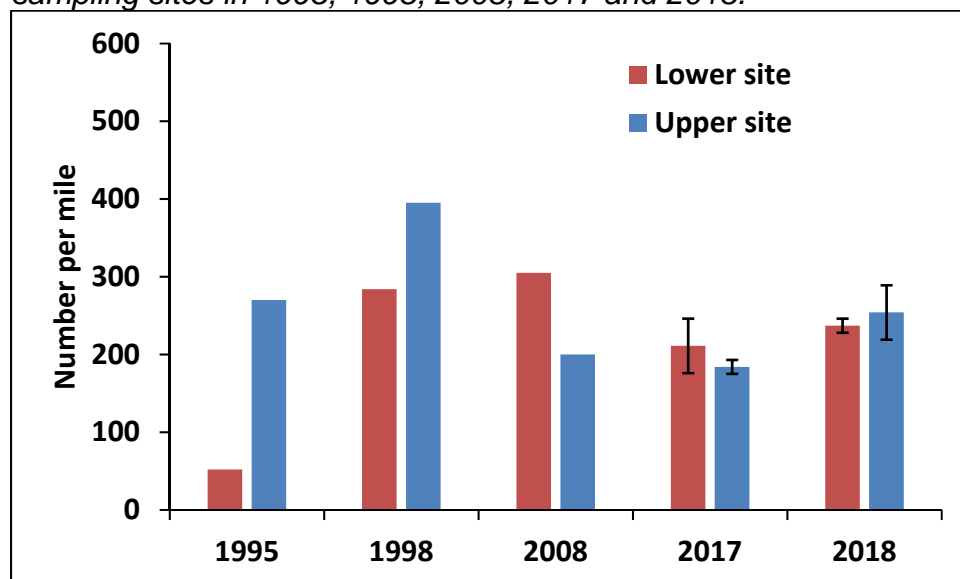
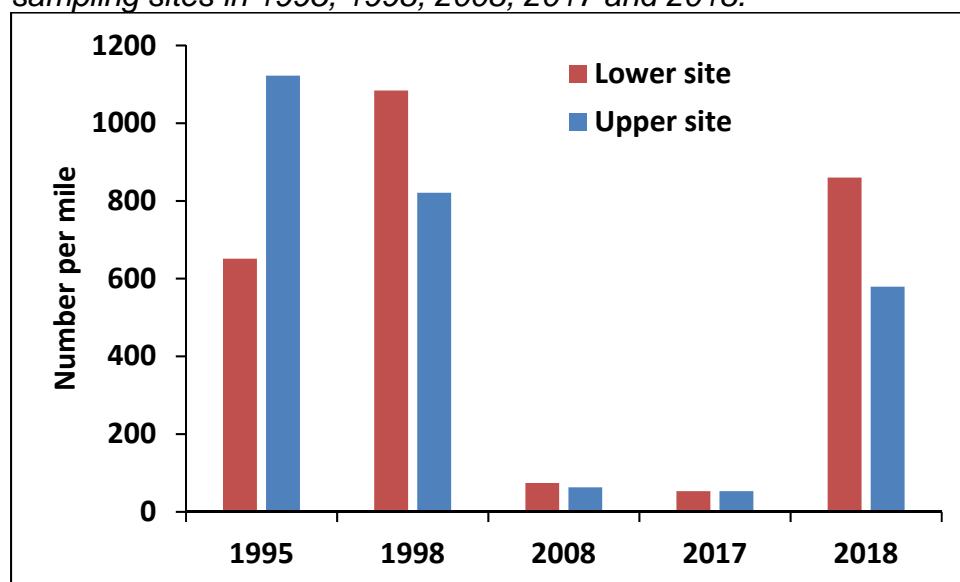


Figure 49. Young-of-year brook trout captured (number/mi) in Stoddard Creek at both sampling sites in 1995, 1998, 2008, 2017 and 2018.



Beehunter Creek

Beehunter Creek was sampled at two sites in 2018. Both sites had been sampled yearly from 2008-2012 and in 2017, with the lower site also done in 1992, 1995 and 2004. At the lower sampling site in 2018, we found a moderate abundance of adult wild brook trout (203 fish/mile) (Figure 50). This was similar to 2017 and the third highest abundance for adult brook trout we have measured at this site. In 2018 at the upper sampling site, we also found a moderate abundance of adult wild brook trout (360 fish/mile) (Figure 50).

The 2018 value for the upper site was lower than any sampling year except 2009 and 2012 (Figure 50).

In 2018, at the lower site, we collected a moderate number of young-of-year brook trout, which was the second highest in any survey year, while at the upper site we collected a low number of young-of-year brook trout (Figure 51).

Figure 50. Adult wild brook trout abundance (number/mi) in Beehunter Creek at both sampling sites in 1992, 1995, 2004, 2008-2012, 2017 and 2018. Note that the upper site was not sampled in 1992-2004.

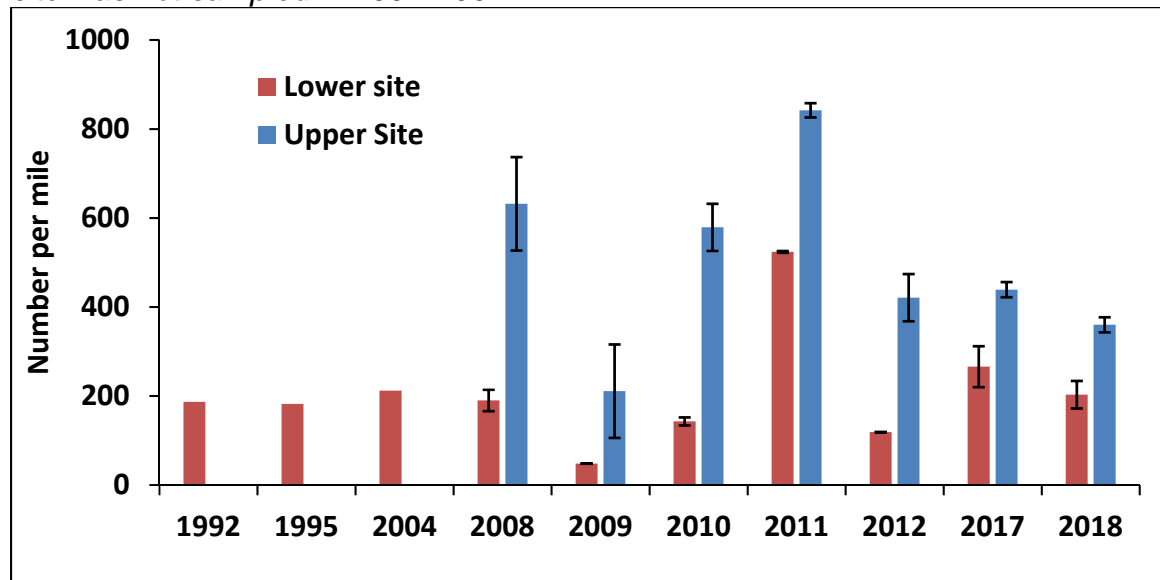
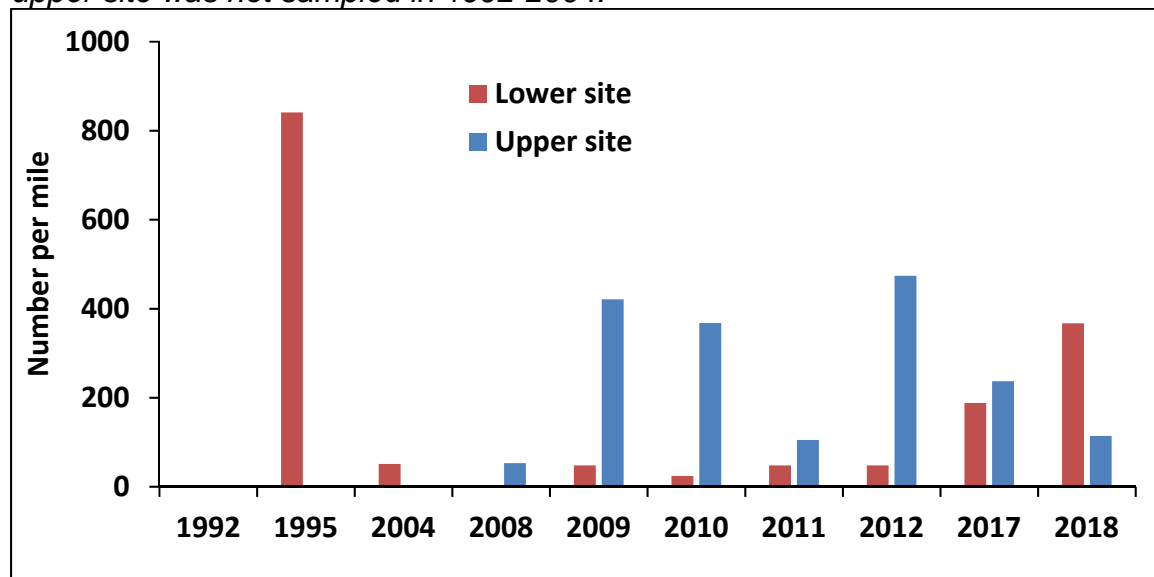


Figure 51. Young-of-year brook trout captured (number/mile) in Beehunter Creek at both sampling sites in 1992, 1995, 2004, 2008-2012, 2017 and 2018. Note that the upper site was not sampled in 1992-2004.



Chautauqua County Streams

Cherry Creek

This tributary of Conewango Creek was sampled at one site in 2018, at the Cherry Creek Village Park. It had previously been sampled in 2007, 2016 and 2017. A moderate abundance of adult wild brown trout was found in 2018 (606 fish/mile). This was lower than the 2016 and 2017 values and similar to 2007 (Figure 52). The largest brown trout captured in 2018 was 16.7 inches. No young-of-year brown trout were found in 2018, following very low numbers being captured in 2017. This contrasts dramatically with moderate to high numbers captured in 2007 and 2016 (Figure 53).

Figure 52. Adult wild brown trout abundance (number/mile) at the Village Park site in Cherry Creek in 2007, 2016, 2017 and 2018.

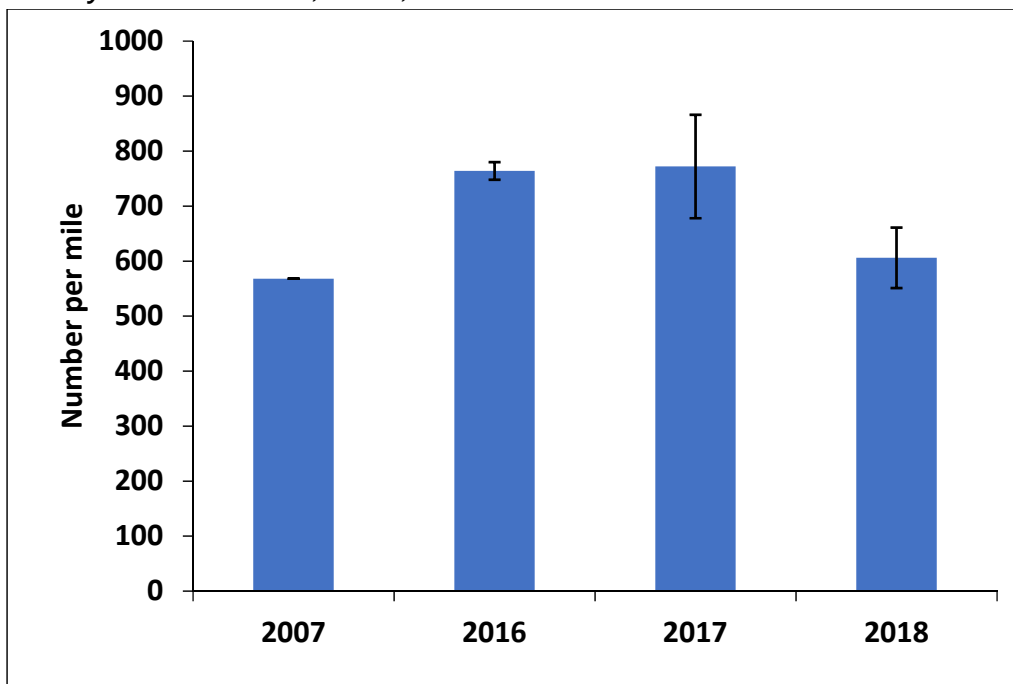
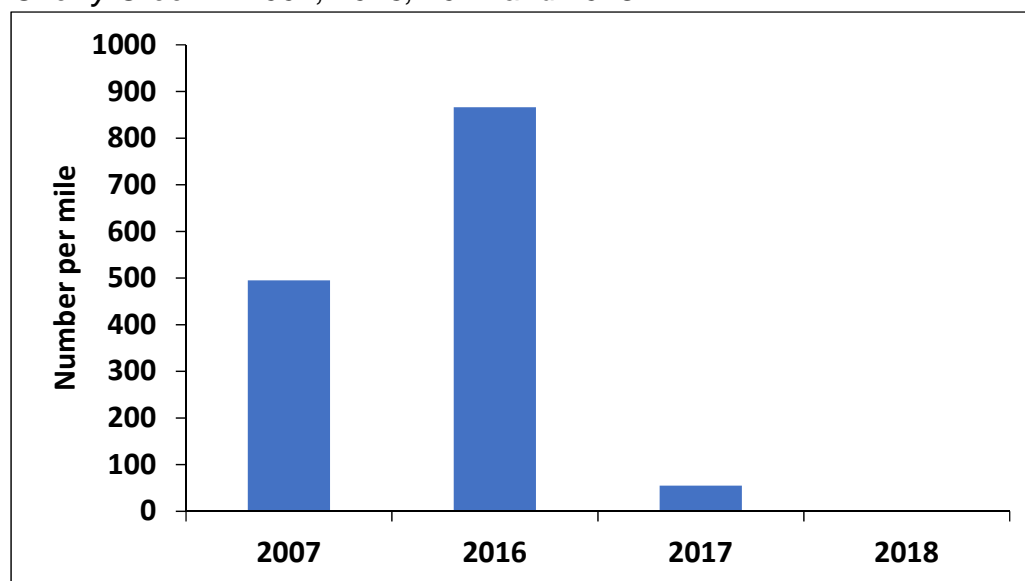


Figure 53. Young-of-year brown trout captured (number/mile) at the Village Park site in Cherry Creek in 2007, 2016, 2017 and 2018.



Clear Creek – Ellington

In 2018, Clear Creek was sampled at two sites, Cowen’s Corners Road (actually, located in Cattaraugus County) and near the gravel pit, two miles upstream of Ellington. The Cowen’s Corners site had been sampled six times previously, in 1995, 2005, 2010, 2015, 2016 and 2017. The site at the gravel pit, additionally, was sampled in 1991. At the Cowen’s Corners site in 2018, we found a moderate adult wild brown trout abundance of 408 fish/mile. This value had decreased from 2016 and 2017 (Figure 54). At our site near the gravel pit in 2018, we continued to see a very high abundance of adult wild brown trout (1,605 fish/mile). However, this value declined considerably from what we found in 2015-2017, but was higher than we found in earlier surveys (Figure 54). The habitat at the gravel pit site did improve considerably after the 2010 survey, with a new, deep pool holding many fish. It should be noted that the gravel pit site overall has habitat considerably better than areas immediately upstream and downstream of the site. Thus, it may not be representative of the stream above Ellington as a whole.

As with many other regional streams in 2017 and 2018, numbers of young-of-year brown trout captured in Clear Creek were not high. At the Cowen’s Corners site, we captured no young-of-year brown trout while a moderate number were captured at the gravel pit site (Figure 55). The largest brown trout captured in 2018 was 16.6 inches.

Figure 54. Adult wild brown trout abundance (number/mile) in Clear Creek - Ellington at both sites in 1991, 1995, 2005, 2010, 2015, 2016, 2017 and 2018. Note, the Cowen's Corners site was not sampled in 1991.

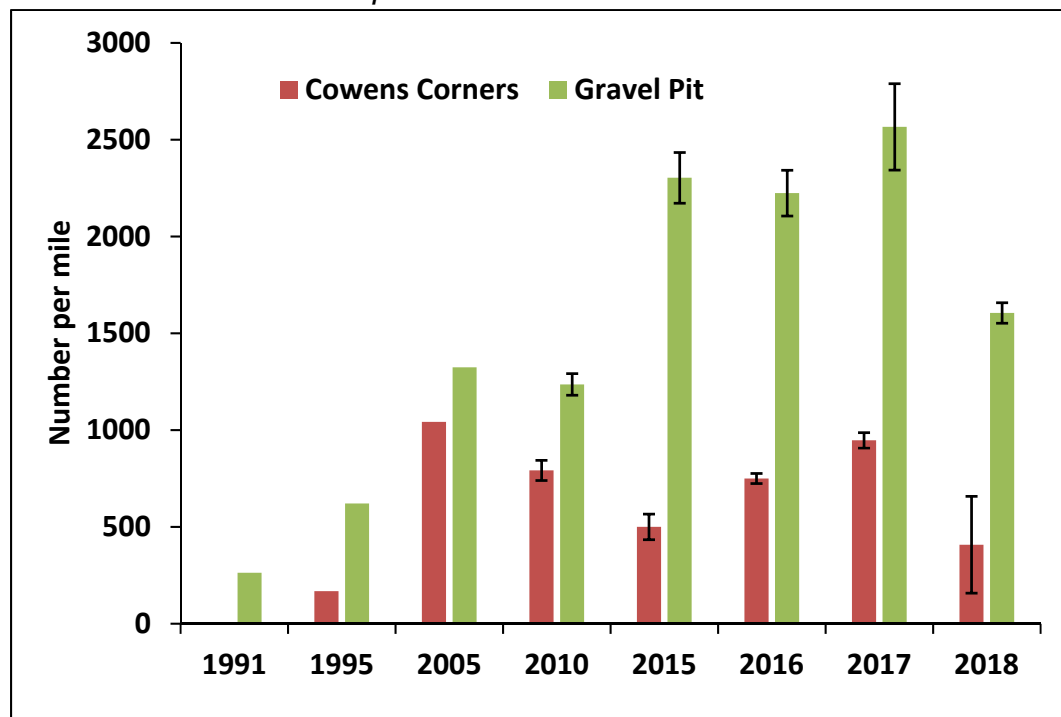
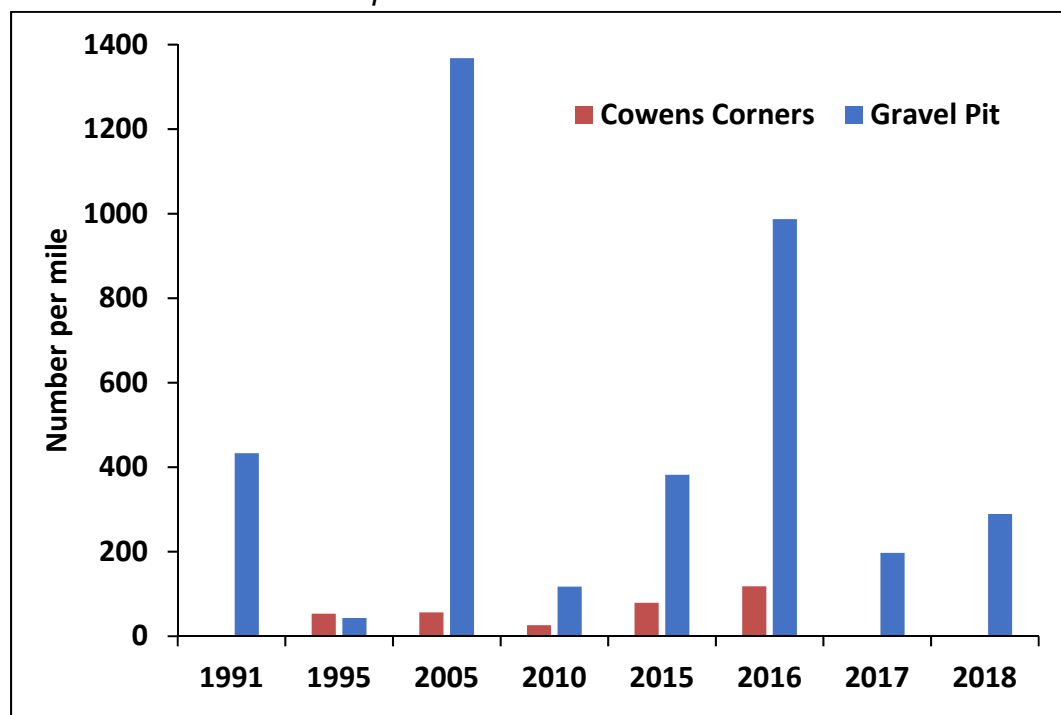


Figure 55. Brown trout young-of-year captured (number/mile) in Clear Creek - Ellington at both sites in 1991, 1995, 2005, 2010, 2015, 2016, 2017 and 2018. Note, the Cowen's Corners site was not sampled in 1991.



Erie County Streams

Spring Brook

Spring Brook was sampled at three sites in 2018, two upstream of Buffalo Street where only wild brook trout are found and one below Buffalo Street where we also find wild rainbow trout. Our site below Buffalo Street at the village sewer plant had previously been sampled in 2007, 2015, 2016 and 2017. At this site in 2018 we found a very low abundance of adult wild brook trout (28 fish/mile) and a moderate population of adult wild rainbow trout (198 fish/mile). The value for brook trout was lower than 2016, but similar to 2015 and 2017. The value for rainbow trout in 2018 was lower than 2015-2017 values (Figure 56). Habitat at this site is exceptionally good, being made up exclusively by rock rip-rap pool structures, installed in 2009.

Upstream of Buffalo Street, at our site in the village park (previously sampled in 2006, 2015, 2016 and 2017), we found a low population of adult wild brook trout (80 fish/mile). This was lower than in 2016 and similar to 2015 and 2017 values (Figure 57). Extensive habitat improvement (LUNKER structures) was done at this site in 2014. Farther upstream at our Maple Ave site, we found a lower abundance of adult wild brook trout (284 fish/mile) than had been measured in 2016, but similar to 2017 and higher than the 2015 survey (Figure 57). The largest brook trout captured in the 2018 survey in Spring Brook was 12 inches (Figure 58), while the largest rainbow trout was 10.8 inches. No young-of-year brook trout were captured in 2018. It is believed that most brook trout reproduction for Spring Brook is occurring in a short section of the main stream above Middle Road or in a tributary in that area. In addition to high summer water temperatures, reproduction may be one of the limiting factors for brook trout in Spring Brook.

Figure 56. Adult wild brook (ST) and rainbow trout (RT) abundance (number/mile) in Spring Brook at the sewer plant site in 2007, 2015, 2016, 2017 and 2018.

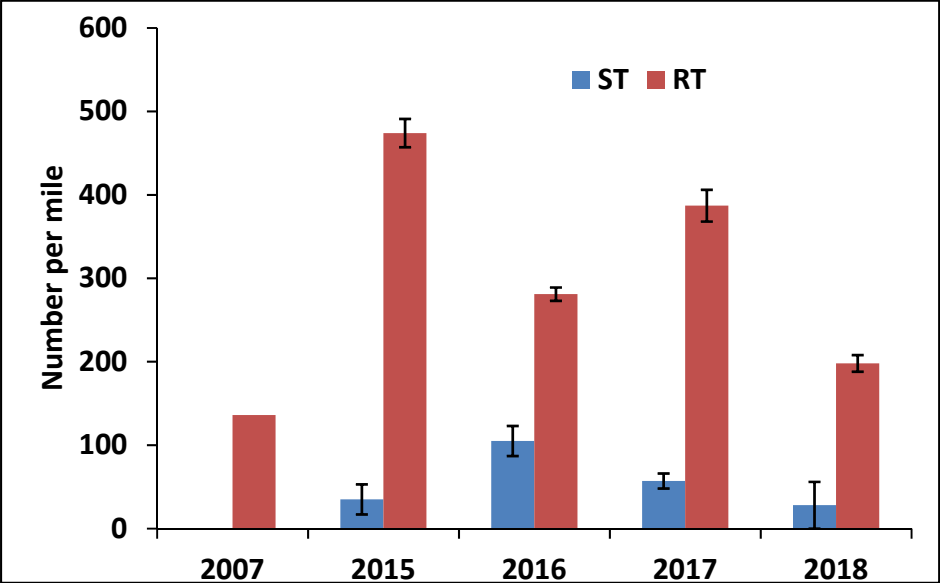


Figure 57. Adult wild brook trout abundance (number/mile) in Spring Brook at the Village Park and Maple Ave. sites in 1992, 2006, 2015, 2016, 2017 and 2018. Note, the Village Park site was not sampled in 1992.

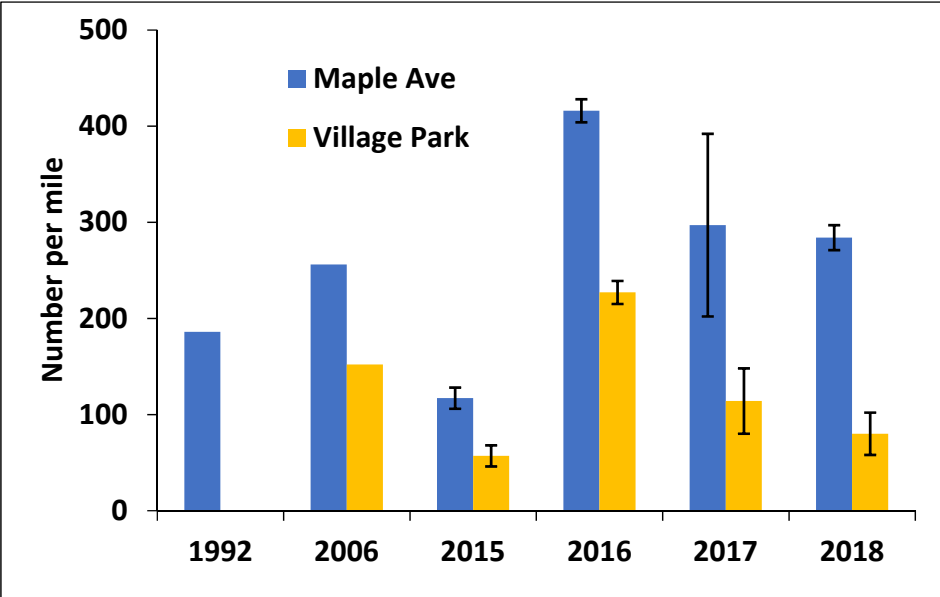


Figure 58. Twelve-inch wild brook trout captured in Spring Brook electrofishing in 2018.



Hosmer Brook

Two sites were sampled on Hosmer Brook in 2018, just above the mouth and above Route 39. These two sites had previously been sampled in 1993, 1995, 1998, 2000, 2002, 2007, 2016 and 2017. At our site above the mouth in 2018, we found a much lower abundance of adult wild brown trout (305 fish/mile) than we found in 2016, but the value was slightly higher than 2017 (Figure 59). We also found a much lower abundance of adult wild rainbow trout in 2018 (83 fish/mile) at this site than in 2016, but the value was unchanged from 2017 (Figure 59). It is likely that in 2016, very high water temperatures just downstream in Cattaraugus Creek caused a considerable number of wild brown and rainbow trout, along with a substantial number of stocked brown trout, to move into Hosmer Brook to gain thermal relief. We did encounter a few hatchery trout in 2017, but none in 2018 and it is possible wild and stocked trout didn't need to move into Hosmer Brook this year to find thermal relief.

In 2018, at our site above Route 39, we found a moderate abundance of adult wild brown trout (277 fish/mile) which was lower than we found in 2000-2017 surveys (Figure 60). Correlating with findings in many other area streams, the abundance of adult wild rainbow trout at this site was low (132 fish/mile) in 2018, but was considerably higher than in 2016, which had been a historic low (Figure 60). The largest wild rainbow trout

captured in 2017 was 11.4 inches and the largest wild brown trout was 17.6 inches. After encountering record high numbers of young-of-year brown and rainbow trout at the site above the mouth in 2016, the 2017 survey revealed very low numbers of young-of-year trout of both species, at both sites. In 2018, we captured low to moderate numbers of young-of-year brown trout, but only low numbers of rainbow trout at both sites (Figures 61 and 62).

Figure 59. Adult wild brown (BT) and rainbow trout (RT) abundance (number/mile) in Hosmer Brook at the site above the mouth in 1993, 1995, 1998, 2000, 2002, 2007, 2016, 2017 and 2018.

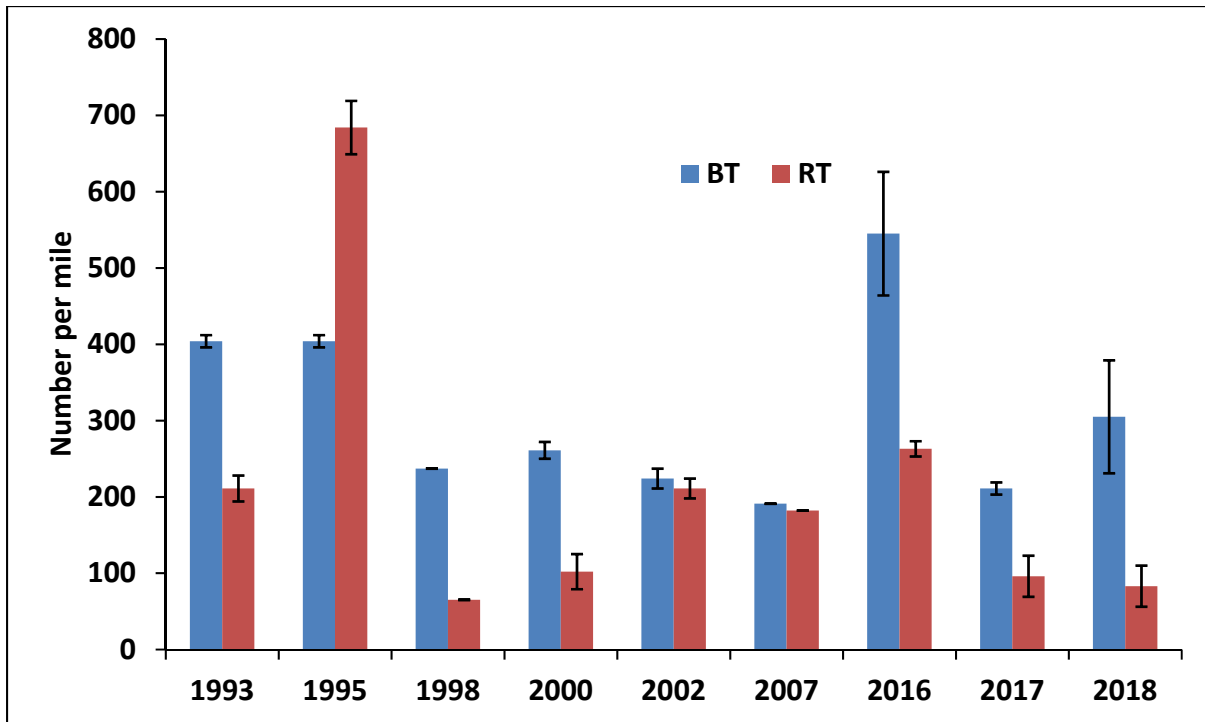


Figure 60. Adult wild brown (BT) and rainbow trout (RT) abundance (number/mile) in Hosmer Brook at the Route 39 site in 1993, 1995, 1998, 2000, 2002, 2007, 2016, 2017 and 2018.

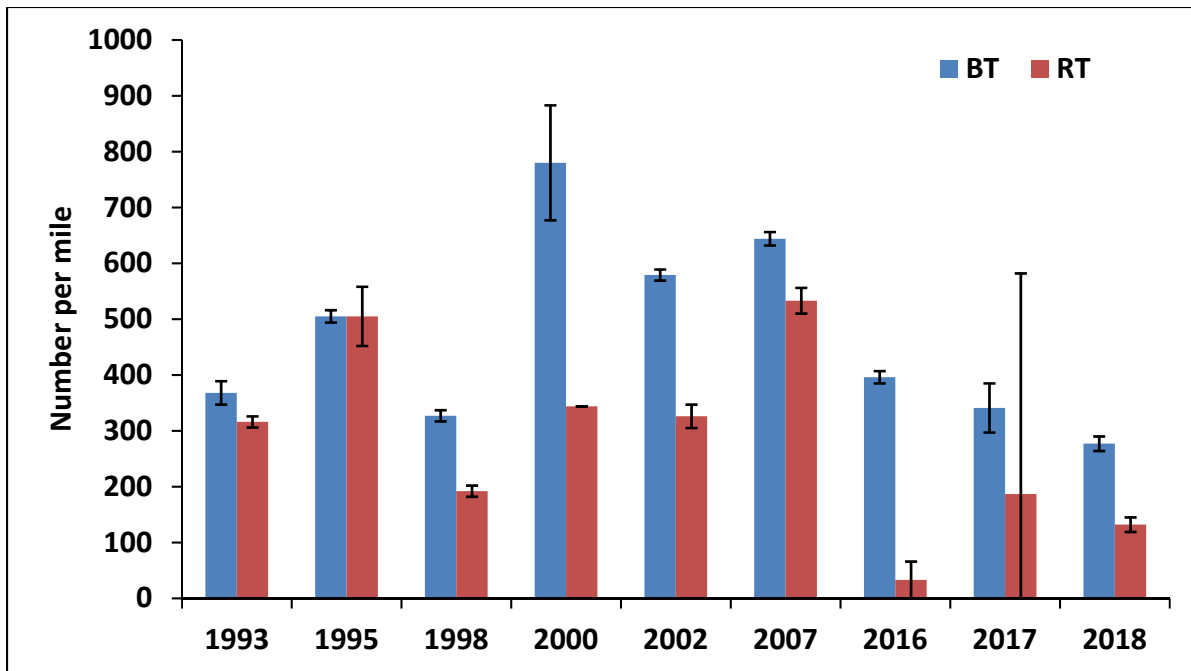


Figure 61. Young-of-year brown (BT) and rainbow trout (RT) captured (number/mile) in Hosmer Brook at the site above the mouth in 1993, 1995, 1998, 2000, 2002, 2007, 2016, 2017 and 2018.

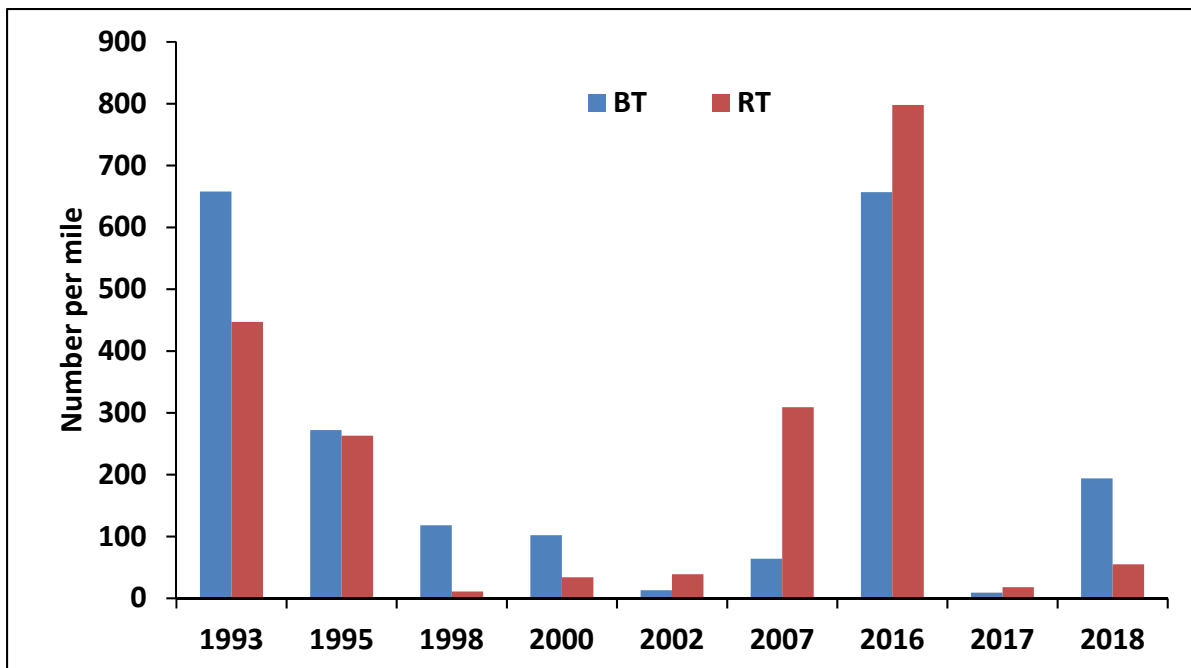
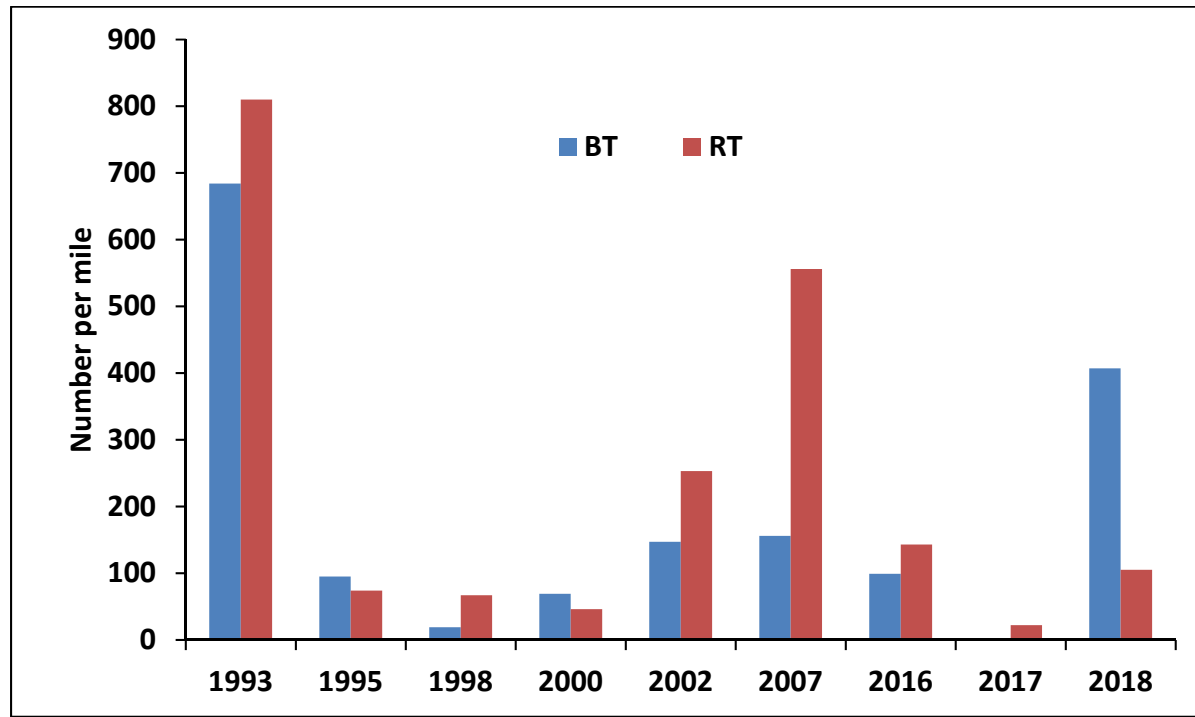


Figure 62. Young-of-year brown (BT) and rainbow trout (RT) captured (number/mile) in Hosmer Brook at the Route 39 site in 1993, 1995, 1998, 2000, 2002, 2007, 2016, 2017 and 2018.



Wyoming County Streams

Oatka Creek

Oatka Creek, a stream stocked with brown and brook trout, as well as having a wild brown trout population, was sampled in 2018 at two sites which had been previously sampled in 1991, 2001, 2013, 2016 and 2017. In 2018, at our site at Munger’s Mills Road we found a moderate population of adult wild brown trout (474 fish/mile). This value was the highest we had measured at this site in any of the six sampling years (Figure 63). We also saw the highest abundance of stocked trout remaining at the site in any sampling year (Figure 63). At the Munger’s Mills Road site in 2017, high stream flows and possible equipment malfunction led to a very imprecise population estimate, which did not allow for comparison of the adult trout abundance. However, based on the total catch of trout in both electrofishing runs in 2017 (38 wild brown trout, 23 hatchery brown trout) compared to the 2016 catch (26 wild brown trout, 19 hatchery brown trout), it is reasonable to assume that there likely were at least as many or more adult wild brown trout at this site in 2017 as the 342 fish/mile we found in 2016.

A moderate abundance of adult wild brown trout were also found at our Route 19 site (397fish/mile) in 2018, with this value being lower than any sampling year since 1991 (Figure 64). Similar to other years, a low number of hatchery brown trout were captured at the Route 19 site in 2018. No young-of-year brown trout were captured at either site in 2018. Very few young-of-year have been seen in any of the survey years and it is believed that most reproduction for this stream is occurring farther upstream or in tributaries.

Figure 63. Adult wild brown (BTW) and hatchery brown (BTS) and brook trout (STS) abundance (number/mile) in Oatka Creek at the Munger's Mills Road site in 1991, 2001, 2013, 2016, 2017 and 2018.

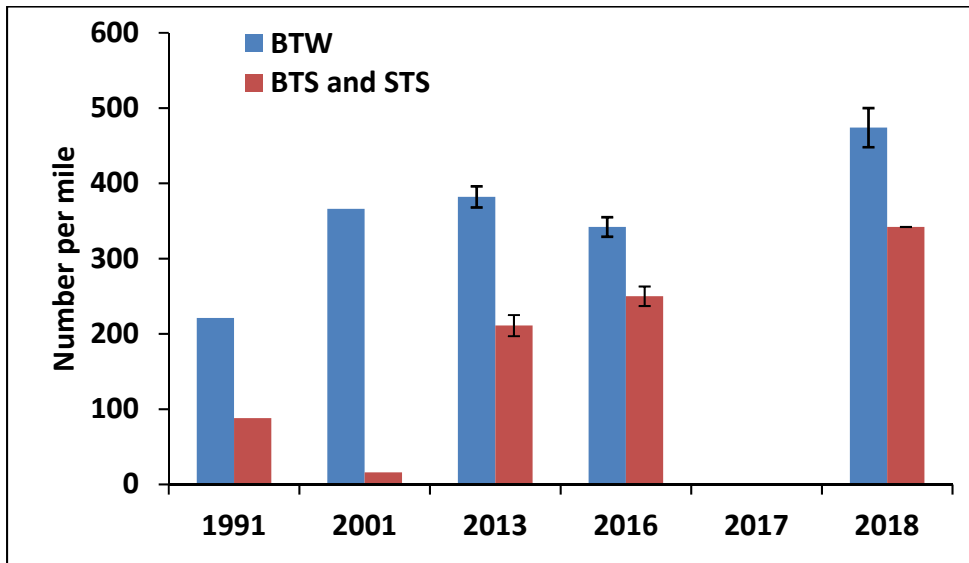
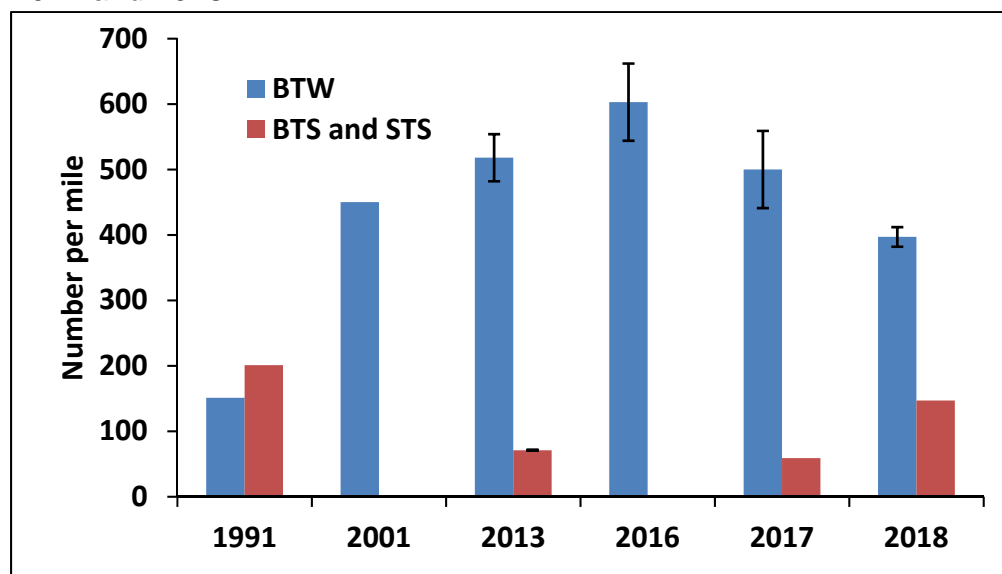


Figure 64. Adult wild brown (BTW) and hatchery brown (BTS) and brook trout (STS) abundance (number/mile) in Oatka Creek at the Route 19 site in 1991, 2001, 2013, 2016, 2017 and 2018.



Cattaraugus Creek

Two sites were sampled on this stream in 2018, one at the site of the Old Cattaraugus Road bridge and one at Route 16 (on the border of Cattaraugus and Erie Counties). The Old Cattaraugus Road site had previously been sampled in 1994, 1996, 1997, 1998, 2004, 2016 and 2017. A very low abundance of wild rainbow trout (9 fish/mile) and a low abundance of wild brown trout (132 fish/mile) were found at the site in 2018 (Figure 65). The abundance of wild rainbow trout equalled the lowest measured since 1994, while the abundance of wild brown trout was the third lowest we have measured (Figure 65). Only two young-of-year brown trout were captured at this site in 2018. Stocked brown trout were in low abundance at this site in 2018 (158 fish/mile), which was much less than we found in 2016 and 2017, and more similar to other survey years (Figure 65).

Our site located at Route 16 was used to replace a site done in 2016 and 2017 above Savage Road, since that site no longer had water in it due to a major shift in the creek's channel. The Route 16 site had previously been sampled in 1990, 1994, 1996, 1997, 1998 and 2004. In 2018, this site contained a low abundance of adult wild brown trout (61 fish/mile) and adult wild rainbow trout (10 fish/mile) and stocked brown trout (121 fish/mile) (Figure 66). The abundance values for wild brown and rainbow trout and stocked brown trout all varied substantially over the sampling years, with no discernable trends in abundance. Wild trout found in this section of Cattaraugus Creek likely result from excess reproduction in tributaries that drop into the main creek during years of high yearling trout abundance in the tributaries.

Figure 65. Adult wild brown trout (BTW), wild rainbow trout (RTW) and hatchery brown (BTS) abundance (number/mile) in Cattaraugus Creek at the Old Cattaraugus Road site in 1994, 1996, 1997, 1998, 2004, 2016, 2017 and 2018.

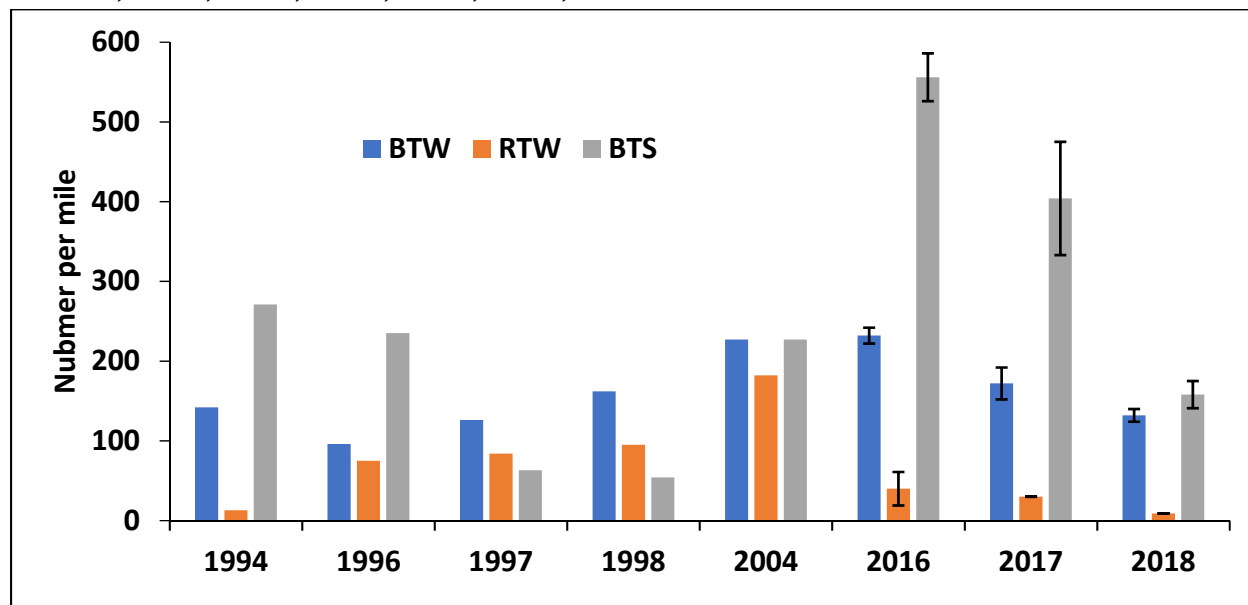
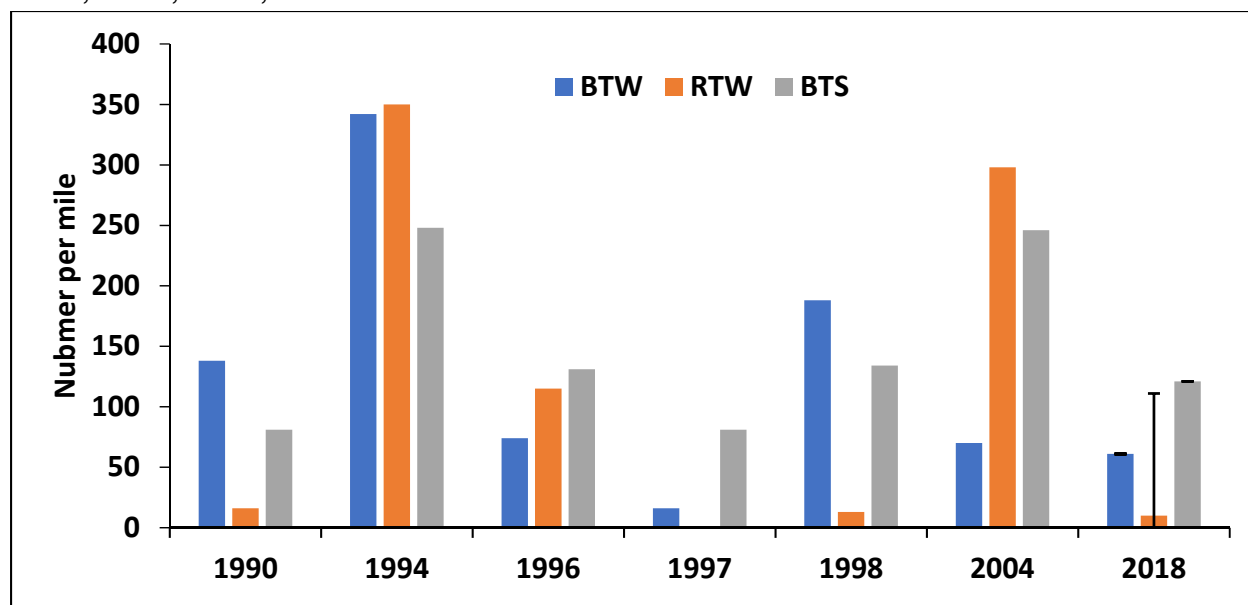


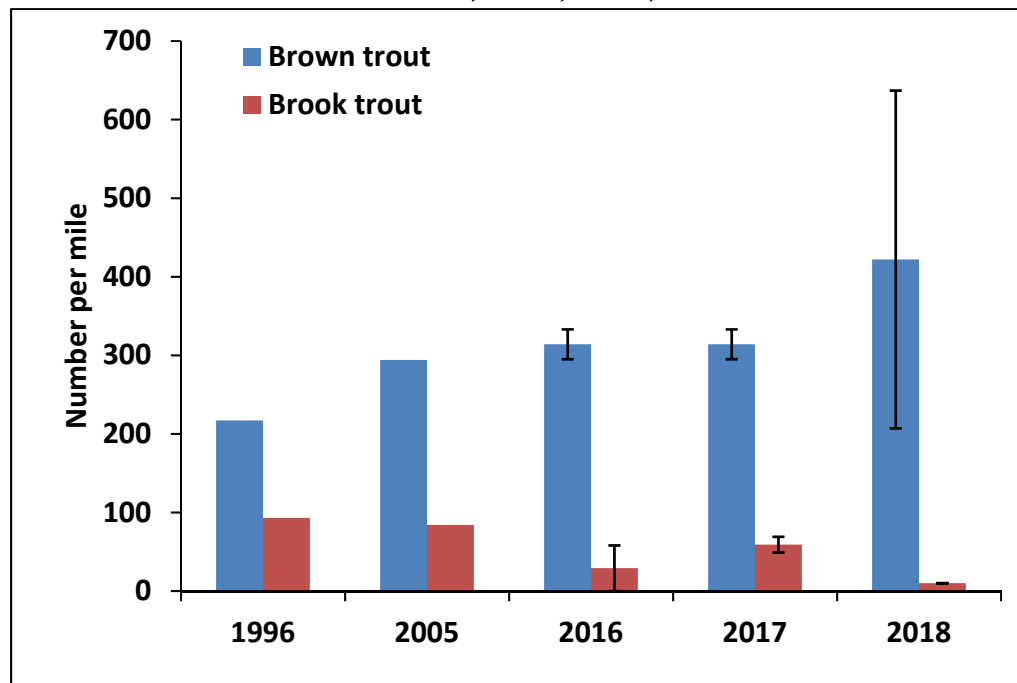
Figure 66. Adult wild brown trout (BTW), wild rainbow trout (RTW) and hatchery brown (BTS) abundance (number/mile) in Cattaraugus Creek at the Route 16 site in 1990, 1994, 1996, 1997, 1998, 2004 and 2018.



Flynn (Spring) Brook

In 2018, one site was sampled on Flynn Brook (also called Spring Brook), at Sullivan Road. The site had also been sampled in 1996, 2005, 2016 and 2017. The abundance of adult wild brown trout in 2018 (422 fish/mile) was higher than we measured in other sampling years. However, due to an abnormally high number of the fish being captured on the second electrofishing run, 2018 abundance was not statistically significantly different than any other sample year (Figure 67). The abundance of adult wild brook trout (10 fish/mile) was the lowest we have measured (Figure 67). Conversely, the author's experience fishing this section of Flynn Brook in May, 2016 and 2017 indicated a fairly abundant brook trout population. In 2016, 2017 and 2018 surveys, done on hot days in July, temperatures were marginal for brook trout at this site (70 degrees), indicating that this section of stream may reach temperatures above brook trout preferences in the summer. It is possible that the brook trout in this section of Flynn Brook may move upstream in the summer to find thermal refuge in cooler sections of the main stream or tributaries, accounting for the lack of fish in July surveys. The largest wild brown trout captured in Flynn Brook this year was 15.8 inches. No young-of-year brook or brown trout were captured at our site in 2017 or 2018. A very low occurrence of young-of-year were found in 2016 and 1996, indicating this site does not normally support much reproduction of trout.

Figure 67. Adult wild brown trout and brook trout abundance (number/mile) in Flynn Brook at the Sullivan Road site in 1996, 2005, 2016, 2017 and 2018.



Clear Creek – Arcade

Two sites were sampled in 2018 on this stream, which had previously been sampled in 1995-1998, 2000, 2002, 2007, 2014, 2016 and 2017. The abundance of adult wild brown trout (407 fish/mile) at our lowermost site, below the old Foamex plant, was considerably higher than we had found in 2014, but below 2016 and 2017 levels and well below the highs found in 1998 and 2000 (Figure 68). At our upper site, across from Sandbank Road, the adult wild brown trout abundance (313 fish/mile) in 2018 was higher than what we found in 2014, the same as 2017, but considerably less than 2016 and 1998-2007 values (Figure 69). The abundance of adult wild rainbow trout at the Foamex site in 2018 (102 fish/mile) was lower than 2014 and 2017, similar to 2016, and far below abundances observed from 1995-2007 (Figure 68). Adult wild rainbow trout at our site at Sandbank Road abundance has varied considerably over survey years with the value in 2018 (361 fish/mile) being higher than 2016, but far less than 2014 and 2017 values (Figure 69). Adult trout habitat abundance at both sites had not changed substantially since 2007. In 2018, the largest brown trout captured in Clear Creek was 15.8 inches and the largest rainbow trout was 10.5 inches.

The number of young-of-year brown trout captured at the Foamex site in 2016 (382 fish/mile), while moderate, was still by far the highest numbers captured in any survey year (Figure 70). However, this number captured was usual and what we found in 2017 and 2018 (low numbers and no fish) was more typical of this site (Figure 70). A correspondingly low number of young-of-year brown trout were captured in 2018 at the Sandbank Road site in 2018. Low numbers were captured at this site in 2014 and 2017 as well (Figure 71). This site more often produced greater number of young-of-year brown trout from 1995-2017 (Figure 71). The Sandbank Road site has normally produced abundant young-of-year rainbow trout, however in 2014 none were captured and in 2017 low numbers were found. In 2018, at this site, we captured the third most of any sampling year (Figure 71). We also captured a low number of young-of-year rainbow trout at the Foamex site in 2018 and, as with brown trout at this site, low numbers were more common than not in past surveys (Figure 70).

Figure 68. Adult wild brown trout (BT) and rainbow trout (RT) abundance (number/mile) in Clear Creek at the site behind Foamex in 1995-1998, 2000, 2002, 2007, 2014, 2016, 2017 and 2018.

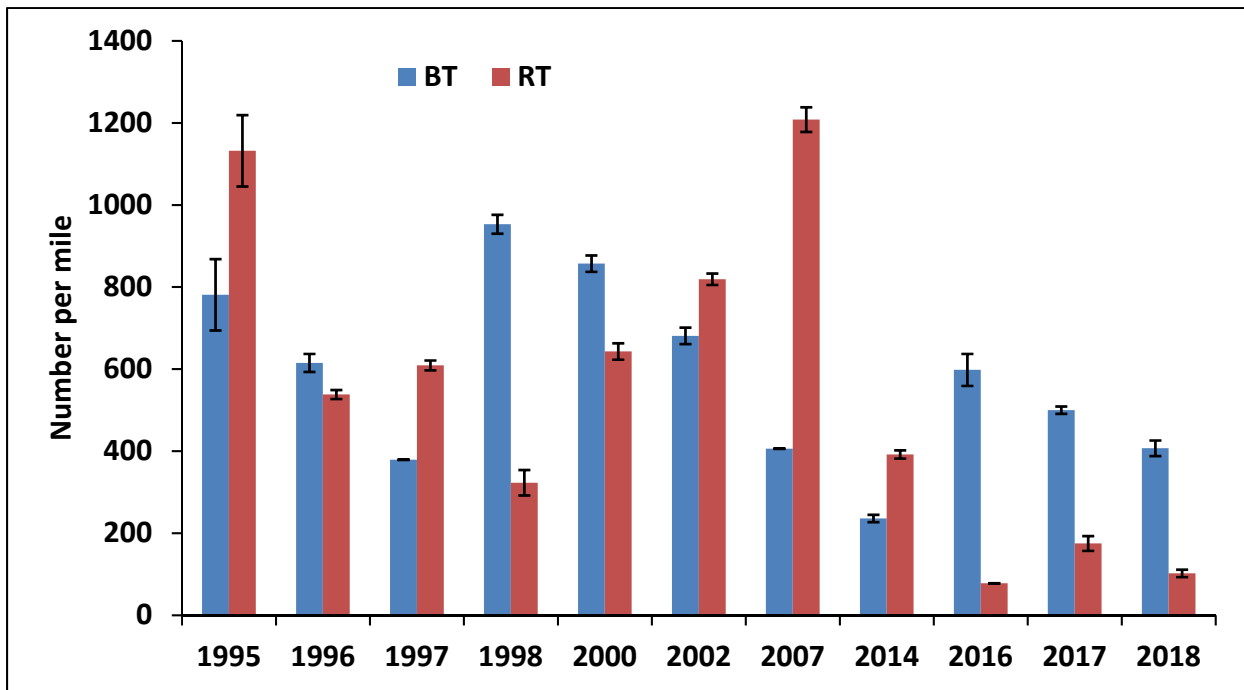


Figure 69. Adult wild brown trout (BT) and rainbow trout (RT) abundance (number/mile) in Clear Creek at the Sandbank Road site in 1995-1998, 2000, 2002, 2007, 2014, 2016, 2017 and 2018.

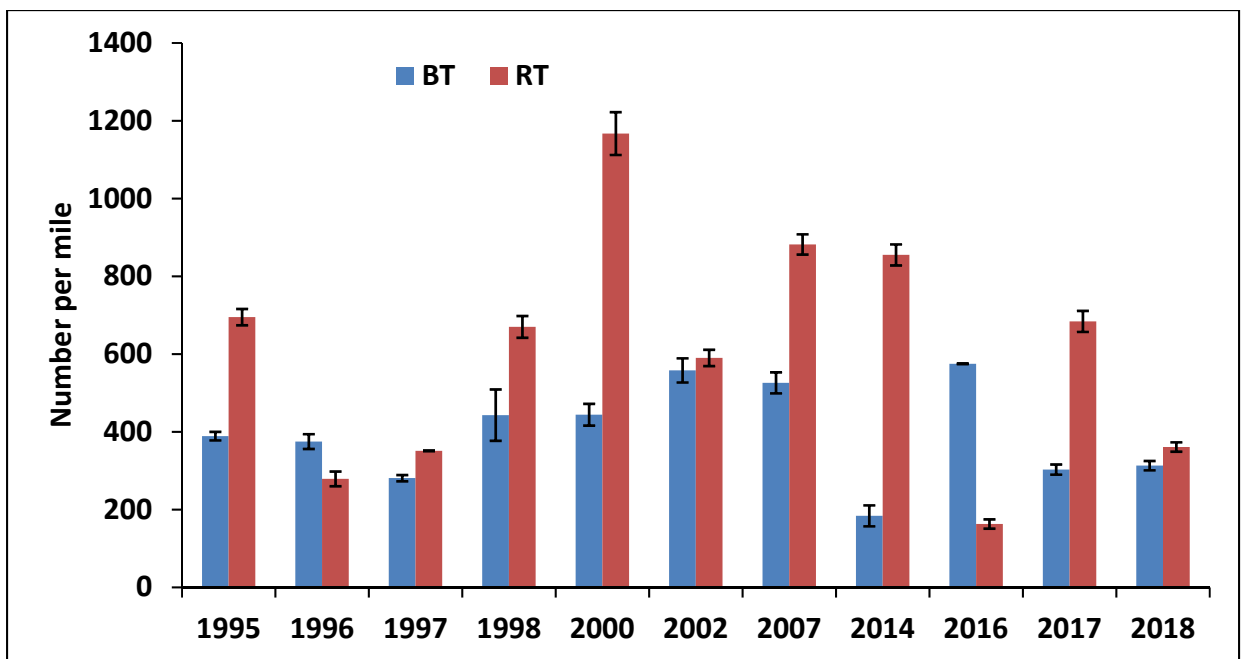


Figure 70. Young-of-year brown trout (BT) and rainbow trout (RT) captured (number/mile) in Clear Creek at the site behind Foamex in 1995-1998, 2000, 2002, 2007, 2014, 2016, 2017 and 2018.

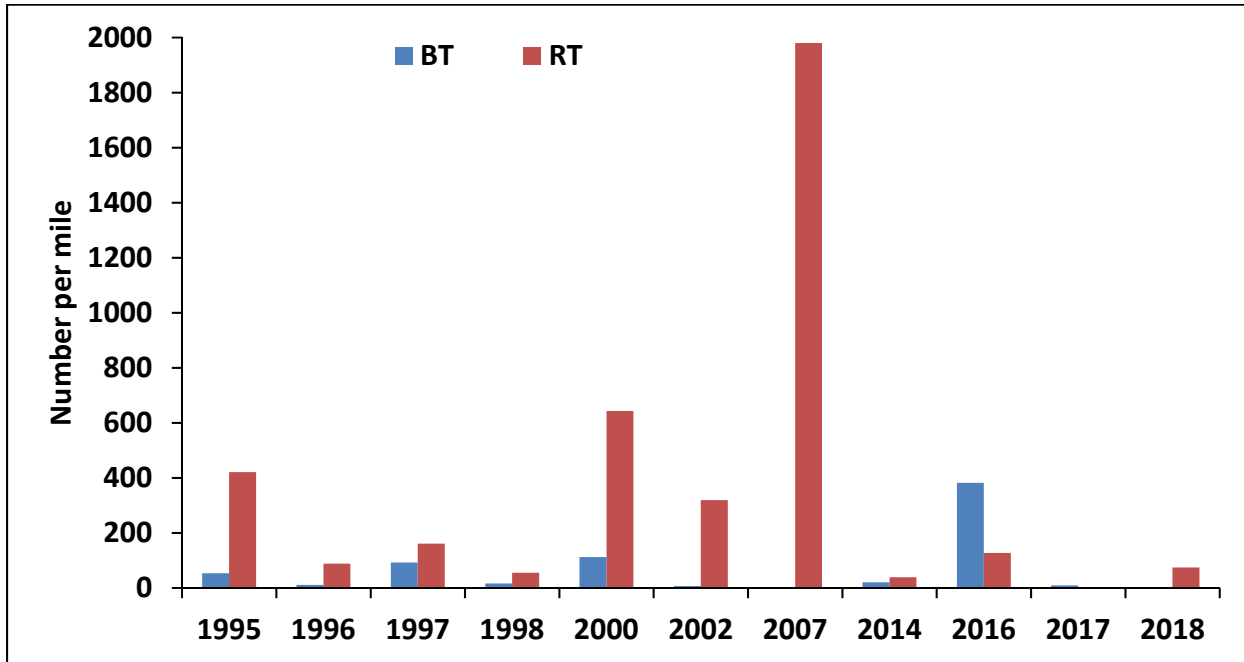
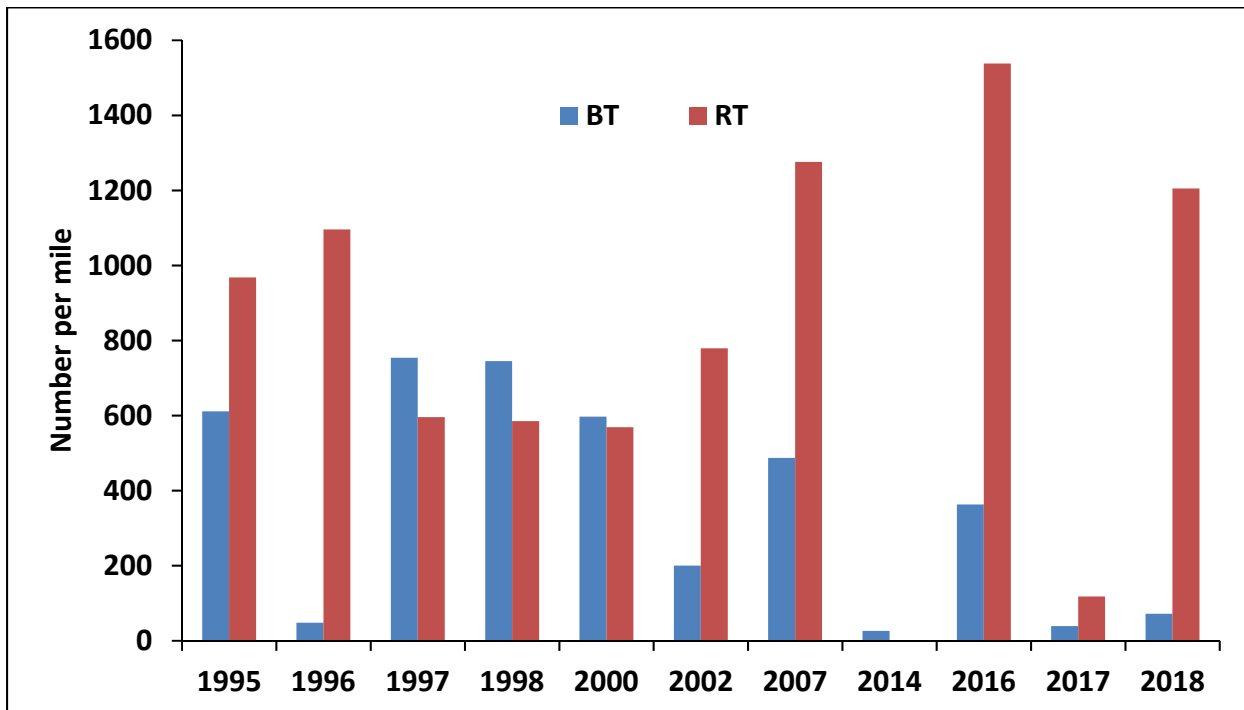


Figure 71. Young-of-year brown trout (BT) and rainbow trout (RT) captured (number/mile) in Clear Creek at the Sandbank Road site in 1995-1998, 2000, 2002, 2007, 2014, 2016, 2017 and 2018.



Trout Brook

Trout Brook was sampled at one site in 2018, located at Hardy's Road. This site had previously been sampled in 2006 and every year from 2009-2017, as part of the evaluation of habitat enhancement work on the N. Branch Wiscoy Creek and Wiscoy Creek watershed sampling. We saw an almost continual decline in the abundance of wild brown trout at this site from over 1,000 fish/mile in 2006 to a low of 227 fish/mile in 2016 (Figure 72). Encouragingly, we did see the abundance increase substantially in 2017 and in 2018 (659 fish/mile). Some notable changes in habitat at this site may be responsible for some of the observed declines in adult trout abundance, particularly that the pool under the Hardy's Road bridge has shallowed noticeably since 2013. This was where a number of larger brown trout were normally captured. In 2016, due to both drought conditions and a substantial water withdrawal for crop irrigation at the time of sampling, much of the site where overhanging alders normally supply cover for yearling brown trout was too low for the fish to use this area. Flows in 2017 and 2018 were much higher and may have allowed more adult trout to utilize this site. The largest brown trout captured in 2018 was 13.8 inches.

Numbers of young-of-year brown trout captured in Trout Brook from 2006-2018 has varied considerably from year to year, with no discernable trends seen. The number seen in 2016 was by far the highest we had observed for this site. The number of young-of-year brown trout captured in 2018 (170 fish/mile) was low, while a moderate number were found in 2017 (Figure 73). A few young-of-year brook trout were captured in 2018. We have seen this in previous survey years and it is likely that these fish are associated with a cold-water tributary that enters near the lower end of our site. Two adult wild brook trout were found at the site in 2018, one of which that was 11 inches long.

Figure 72. Adult wild brown trout abundance (number/mile) in Trout Brook at the Hardy's Road site in 2006 and 2009-2018.

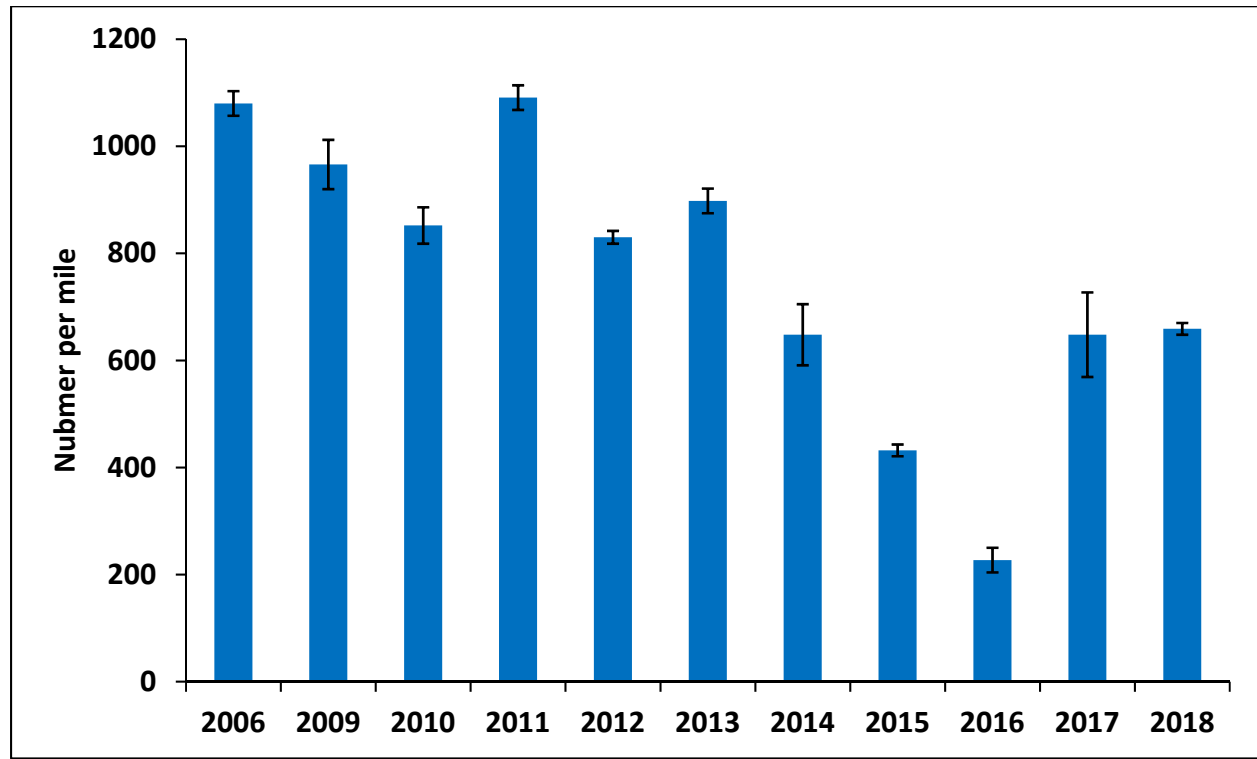
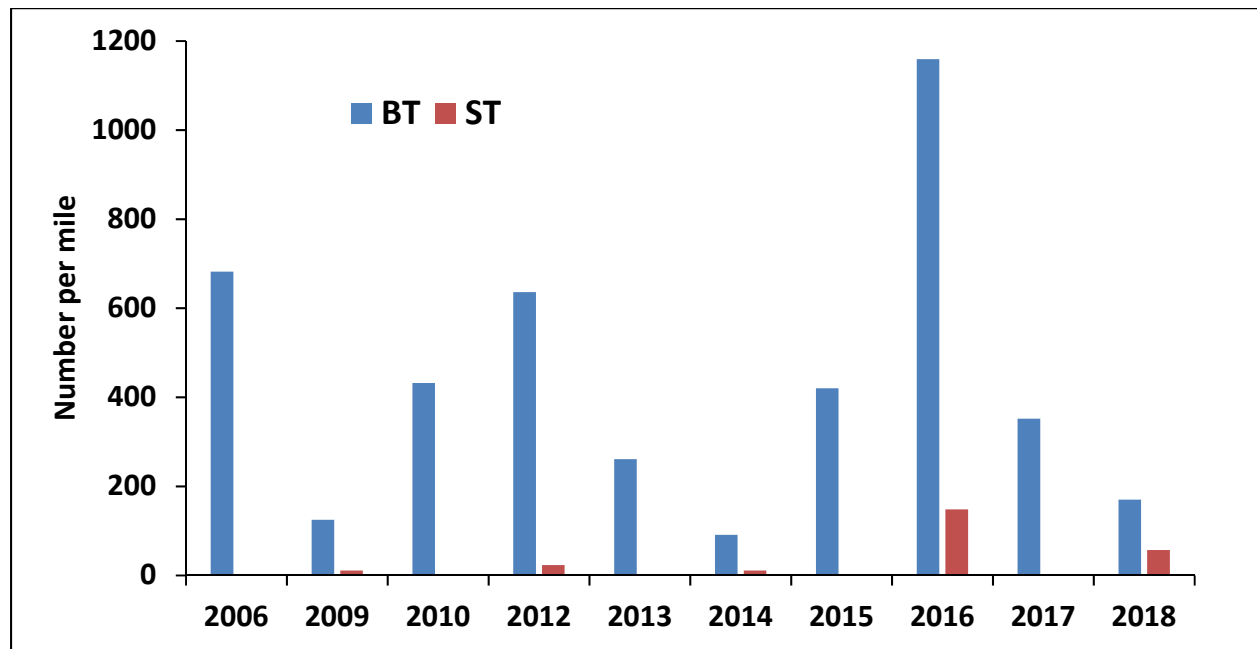


Figure 73. Young-of-year brown trout (BT) and brook trout (ST) captured (number/mile) in Trout Brook at the Hardy's Road site in 2006 and 2009-2018. Note, young-of-year trout were not collected in 2011 sampling.



North Branch Wiscoy Creek

The North Branch Wiscoy Creek (N. Branch) contains some of the best water quality and spawning habitat for wild brown trout in Region 9. Three sites were sampled on the N. Branch in 2018. The site in the Village of Bliss had been sampled in 2006 and yearly from 2009-2017. The other two sites were in the section where a habitat enhancement project (utilizing LUNKER structures) was completed in 2011, with these sites having been sampled from 2012-2017. Adult wild brown trout abundance at the Village of Bliss site peaked in 2009 at over 1,800 fish/mile and steadily declined to around 900 fish/mile in 2014 and 2015 (Figure 74). In 2018 adult brown trout abundance had increased to 1,333 fish/mile, the same as 2016, and slightly higher than 2016 (Figure 74). Adult trout habitat at this site remained very stable in the entire survey period. The pattern of adult wild brown trout abundance at the two sites where habitat enhancement was completed was very similar from 2012-2018 with the abundance in 2018 (1,655 fish/mile and 1,056 fish/mile) being very similar to what we found in 2014 and 2015, higher than 2017 and substantially lower than 2016 (Figure 74). These adult trout abundance values are considerably higher than what was found in the section prior to habitat enhancement, especially for age two and older fish. In 2018, the largest brown trout captured in the N. Branch was 16.5 inches.

Brown trout young-of-year numbers captured were variable between the three sites, but high compared with most sites on other streams this summer. As with the adult populations, year to year patterns were generally consistent between the three sites. At the Village of Bliss site, we captured a high number (750 fish/mile), similar to 2009, 2010 and 2014-2017, but considerably lower than 2012 and 2013 (Figure 75). The number of young-of-year captured at the lower habitat enhancement site (1,327 fish/mile), was higher than 2014-2017, but much lower than 2012 and 2013 (Figure 75). At the upper habitat enhancement site we also captured a high number (1,000 fish/mile), similar to 2013, but lower than 2012, 2013 and 2014-2017 (Figure 75).

Figure 74. Adult wild brown trout abundance (number/mile) in North Branch Wiscoy Creek at all three sampling sites in 2006 and 2009-2018. Note, the two habitat sites were not sampled in 2006-2011.

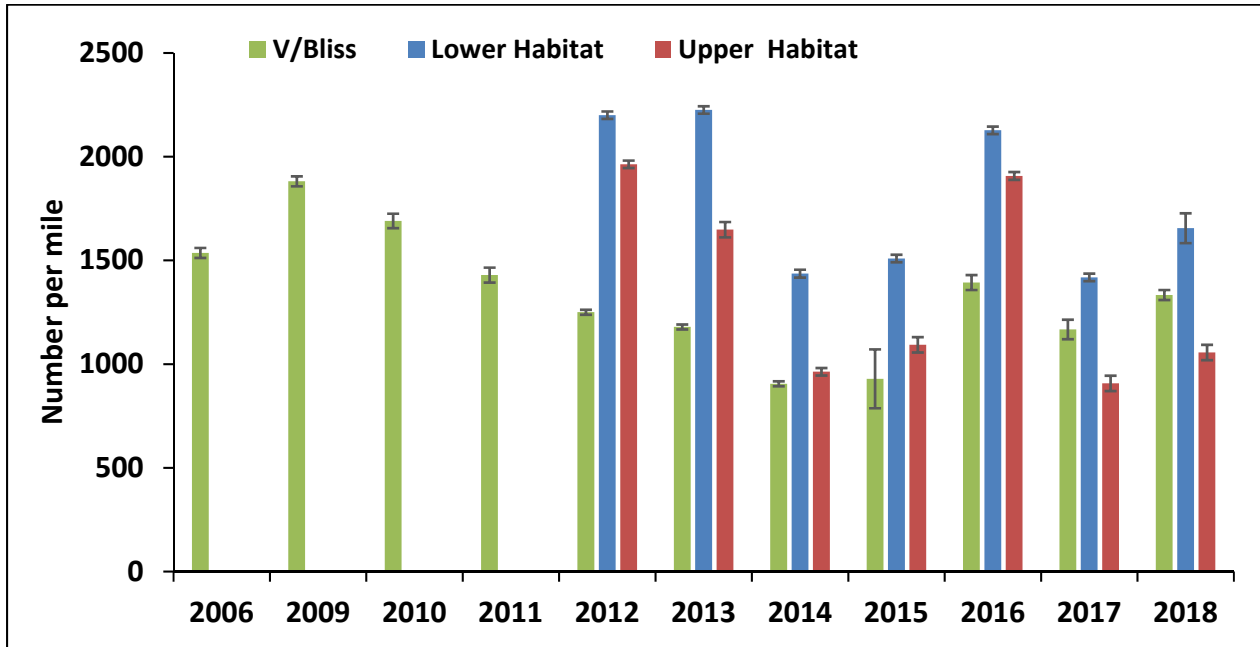
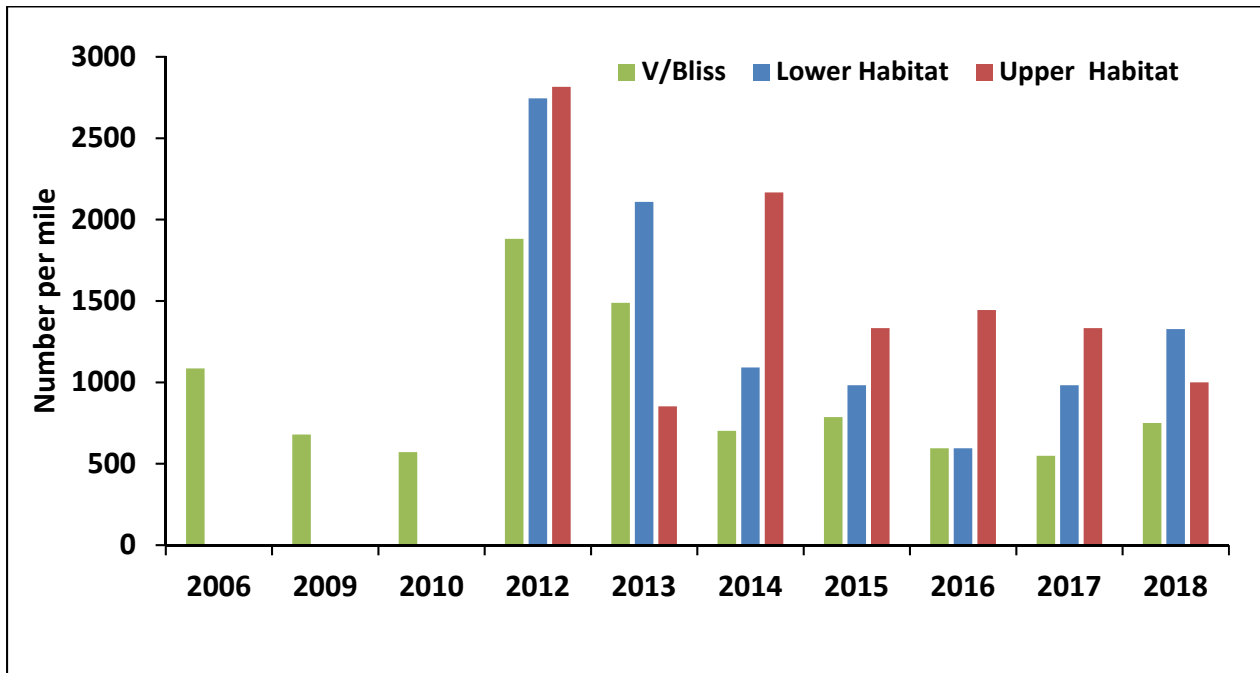


Figure 75. Young-of-year brown trout captured (number/mile) in North Branch Wiscoy Creek at all three sites in 2006, 2009, 2010 and 2012-2018. Note, the two habitat sites were not sampled in 2006-2010 and young-of-year were not collected in 2011 sampling.



Wiscoy Creek

Wiscoy Creek, Region 9's best-known wild brown stream, was sampled at four sites in 2018; the Boy Scout Camp, Wyoming County Fairgrounds, above Trout Brook and at Hillside Road. These sites had all been sampled multiple times, ranging from eight to eleven times between 1978 and 2017. Adult wild brown trout abundance at the Scout Camp site has varied considerably over the 12 sampling years (Figure 76), with the abundance in 2018 (330 fish/mile) being the lowest we have measured. However, this did include two fish >18 inches. The 2018 abundance was unchanged from 2017. Adult trout habitat abundance at this site has declined considerably since 2012, as extensive log cribbing structures have deteriorated to the point they no longer provide much adult trout shelter. The sampling site at the Fairgrounds maintained moderate to high adult trout abundance from 1991 through 2012, then experienced a precipitous decline in 2015 (Figure 77). Adult brown trout abundance increased slightly in 2016 and 2017 but declined again to 465 fish/mile in 2018 (Figure 77). Adult trout habitat abundance at this site has remained quite stable since 2001.

Adult brown trout abundance at the site above Trout Brook in 2018 (570 fish/mile), was higher than 2015, but lower than the 2017 value and well below abundances measured from 1988-2012 (Figure 78). Adult trout habitat abundance at this site has varied considerably over the sampling period, which may account for some of the population variation. At the Hillside Road site, located in the middle of the Catch and Release Section, we have seen a gradual decline in adult brown trout abundance since 1993 (with the exception of 2001) (Figure 79). In 2018, adult brown trout abundance (899 fish/mile) was unchanged from 2015-2017 values and considerably lower than 2012 (Figure 79). This site had peaked in 2001 when we found an extraordinary 3,329 fish/mile and adult trout habitat has not changed substantially since that time.

As was found in 2015-2017, the abundance of larger brown trout (>15 inches) in 2018 continues to be much higher than sampling from 1978-2006. Eleven trout >15 inches were captured between the four sites in 2018 (of the 228 total adult trout captured), with eight of those being >16 inches and four were >18 inches (one from the Fairgrounds site is pictured in Figure 80). The largest brown trout captured in 2018 was 19.9 inches. Two large brown trout captured in 2018 at the Boy Scout Camp site were the same fish (based on unique spotting patterns) we captured at the site in 2016 and 2017.

As was the case in 2017, reproduction of brown trout in 2018 was very poor at all four sites. At the most downstream site (Scout Camp), after capturing an very high number of young-of-year (1,612 fish/mile) in 2016, we captured a very low number (99 fish/mile) in 2018 (Figure 81). The Fairgrounds site in 2018 produced no young-of-year trout. It should be noted that even during years of high adult brown trout abundance at the Scout Camp and Fairgrounds sites, low numbers of young-of-year were normally

collected (Figures 81 and 82). At the site above Trout Brook a very low number of young-of-year trout were captured (53 fish/mile), one of the lowest in any of the nine sampling years (Figure 83). At the Hillside Road site, a low number were also captured (101 fish/mile), similar to 2009, 2015-2017, but far below earlier sampling years (Figure 84). Overall, it appears that brown trout reproduction in the Wiscoy Creek in 2017 and 2018 was very poor, compared with historical data, not unlike many other streams sampled throughout Region 9 in 2018.

Figure 76. Adult wild brown trout abundance (number/mile) in Wiscoy Creek at the Boy Scout Camp site in 1978, 1988, 1991, 1997, 2001, 2006, 2009, 2012, 2015, 2016, 2017 and 2018.

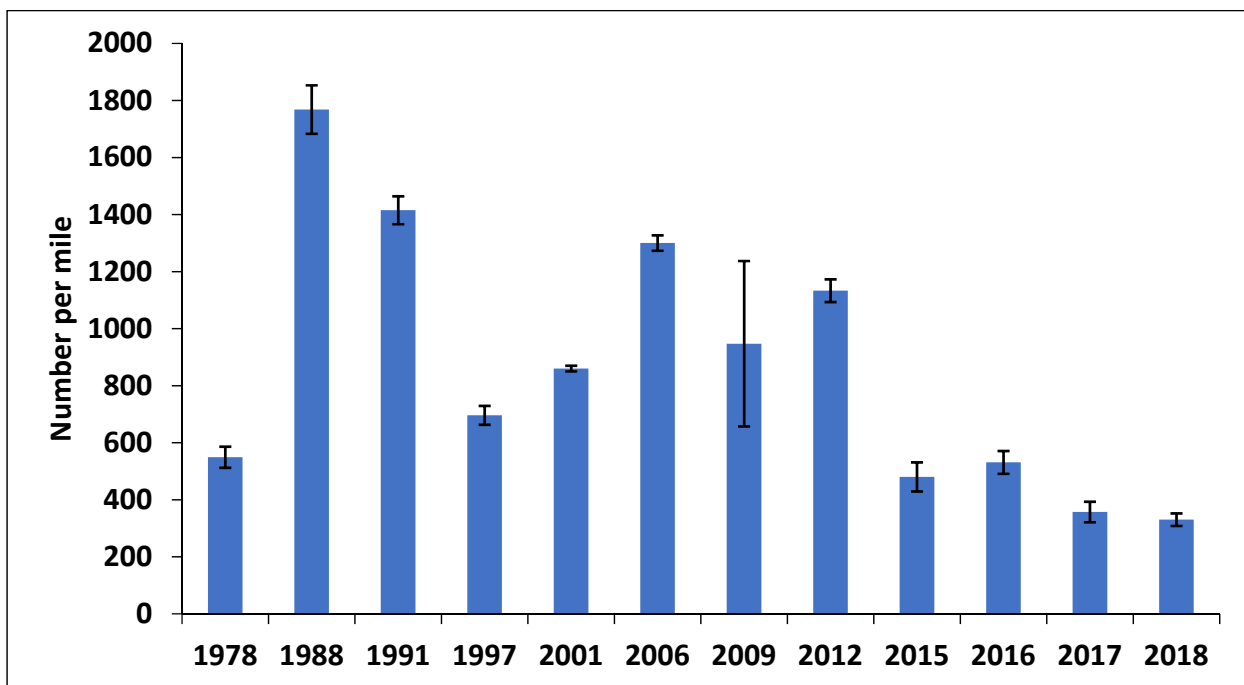


Figure 77. Adult wild brown trout abundance (number/mile) in Wiscoy Creek at the Fairgrounds site in 1991, 1997, 2001, 2006, 2009, 2012, 2015, 2016, 2017 and 2018.

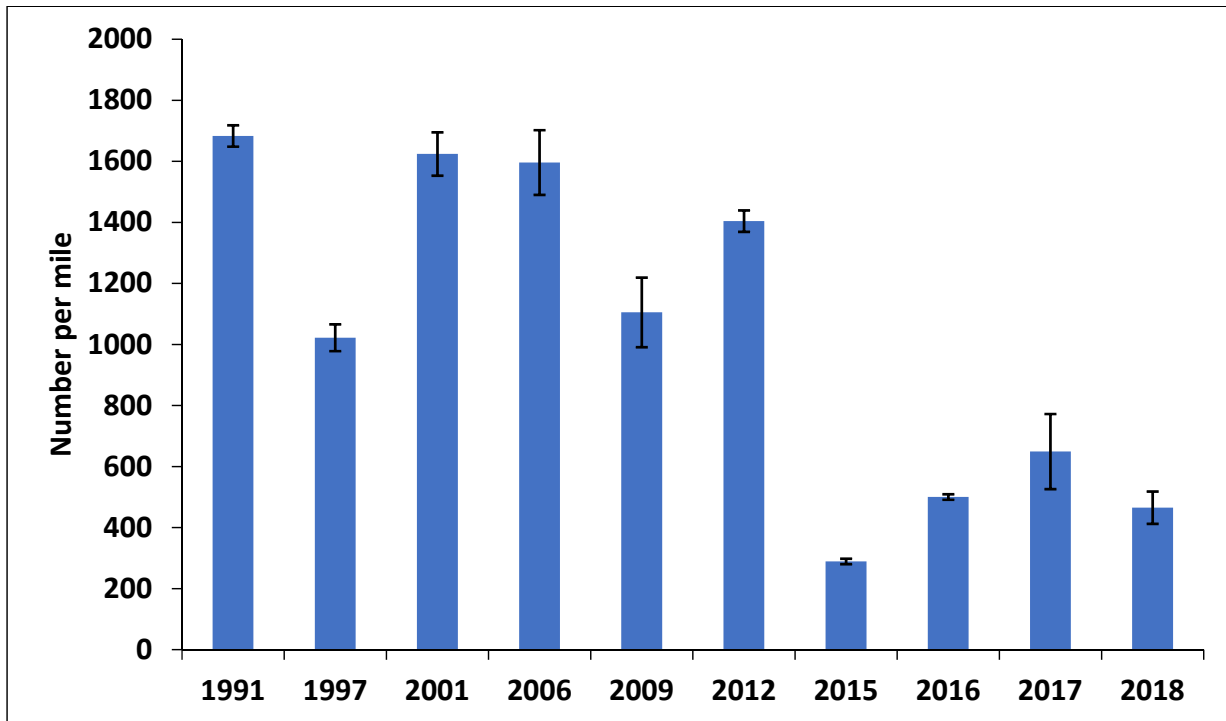


Figure 78. Adult wild brown trout abundance (number/mile) in Wiscoy Creek at the site above Trout Brook in 1978, 1988, 1991, 2006, 2009, 2012, 2015, 2017 and 2018.

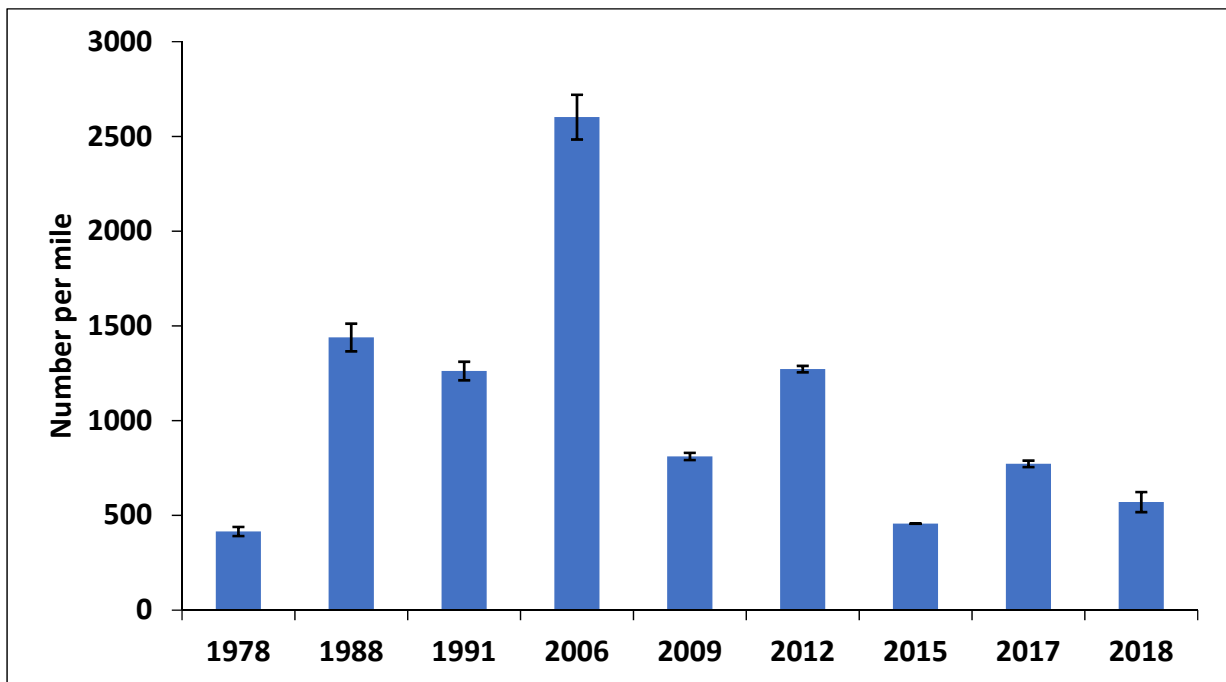


Figure 79. Adult wild brown trout abundance (number/mile) in Wiscoy Creek at the Hillside Road site in 1992, 1993, 1997, 2001, 2006, 2009, 2012, 2015, 2016, 2017 and 2018.

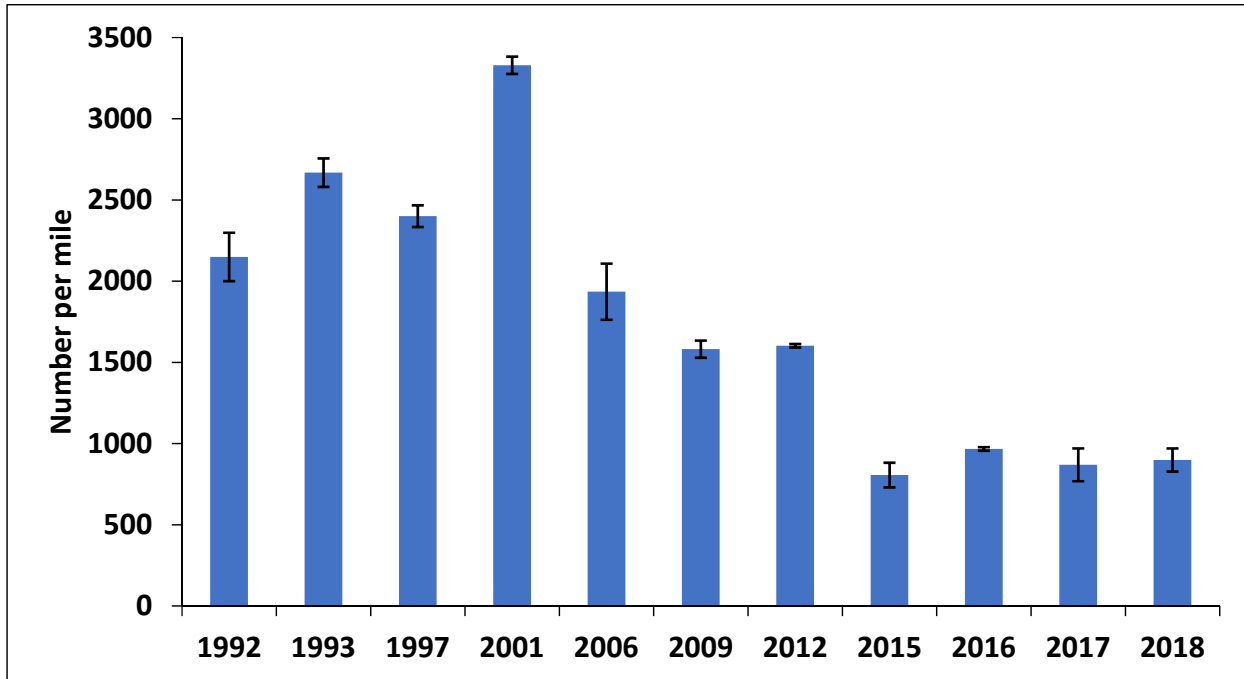


Figure 80. 19.9-inch wild brown trout captured at the Fairgrounds site in 2018.



Figure 81. Young-of-year brown trout captured (number/mile) in Wiscoy Creek at the Boy Scout Camp site in 1978, 1988, 1991, 1997, 2001, 2006, 2009, 2012, 2015, 2016, 2017 and 2018.

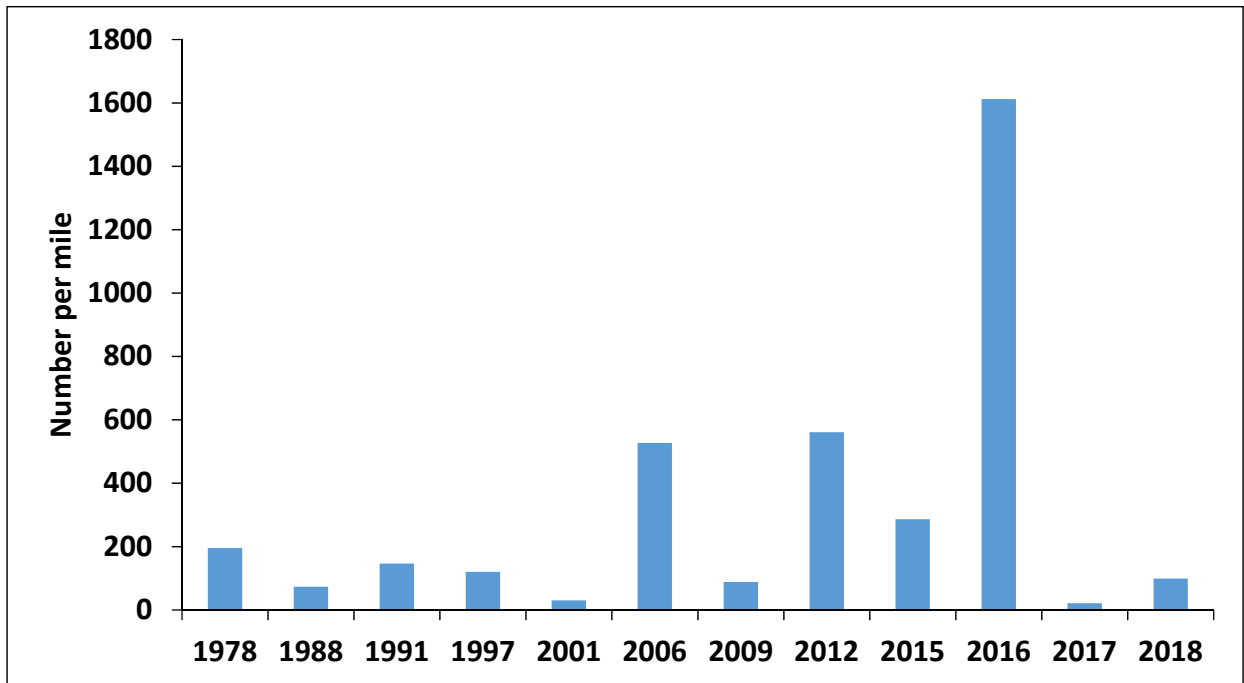


Figure 82. Young-of-year brown trout captured (number/mile) in Wiscoy Creek at the Fairgrounds site in 1991, 1997, 2001, 2006, 2009, 2012, 2015, 2016, 2017 and 2018.

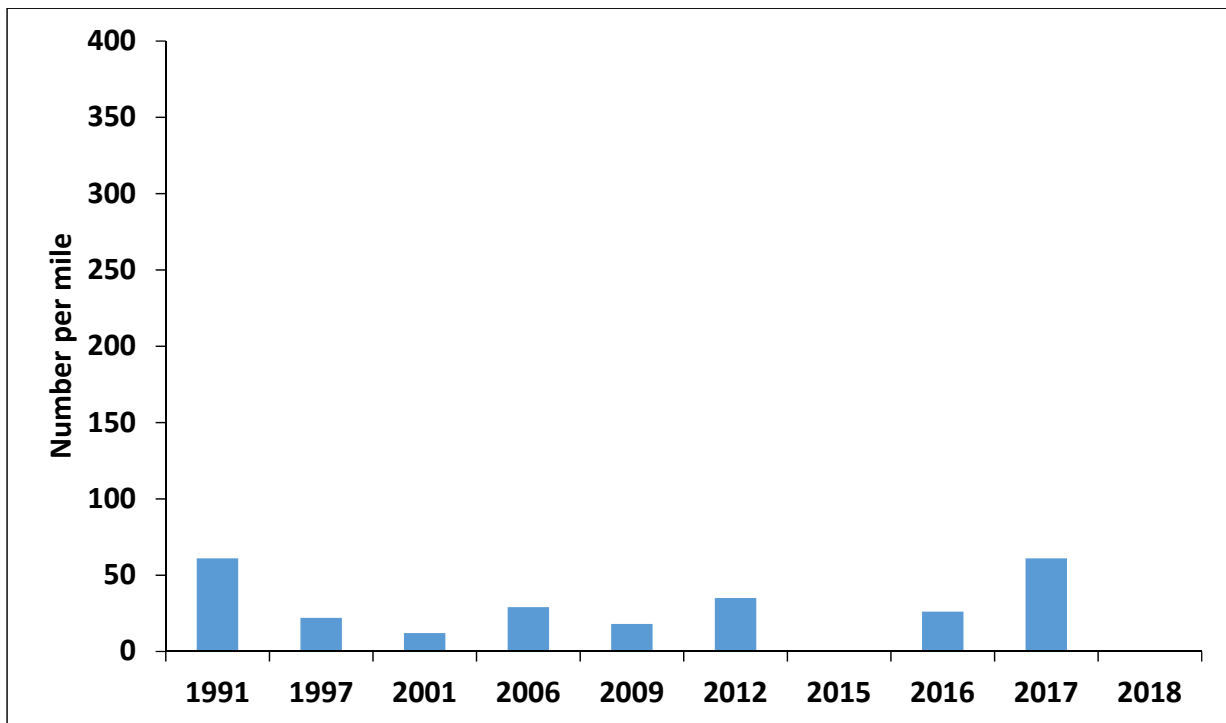


Figure 83. Young-of-year brown trout captured (number/mile) in Wiscoy Creek at the site above Trout Brook in 1978, 1988, 1991, 2006, 2009, 2012, 2015, 2017 and 2018.

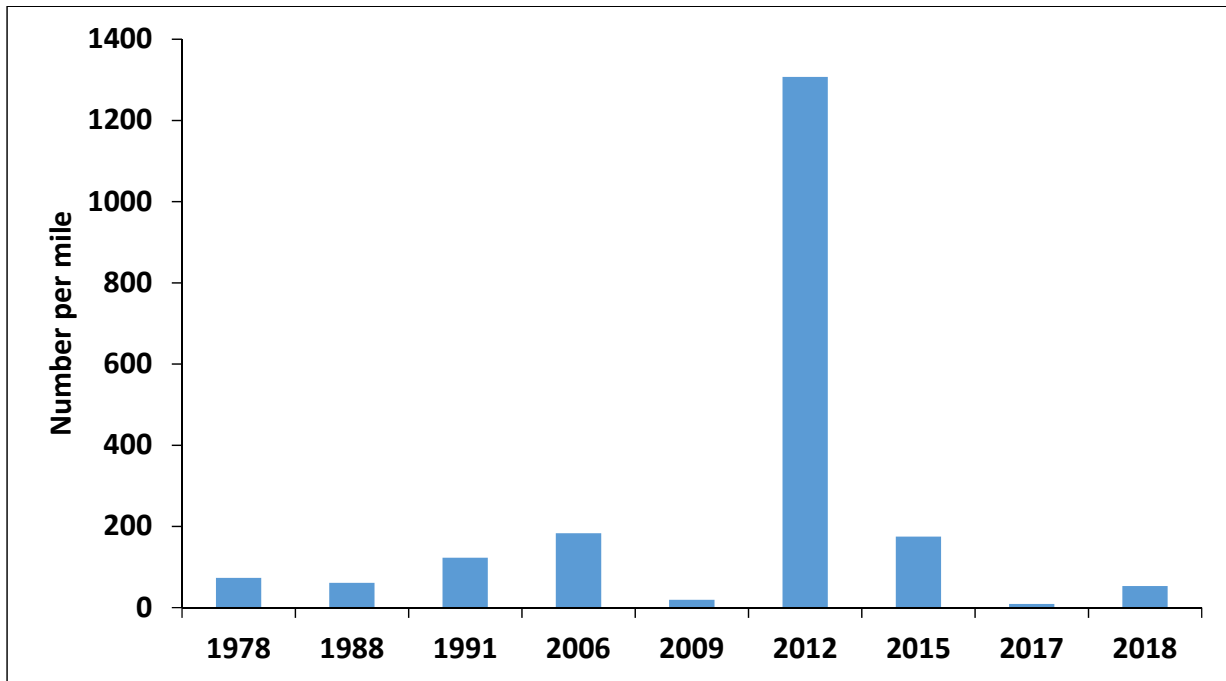


Figure 84. Young-of-year brown trout captured (number/mile) in Wiscoy Creek at the Hillside Road site in 1992, 1993, 1997, 2001, 2006, 2009, 2012, 2015, 2016, 2017 and 2018.

