

AGFC Trout Management Program Annual Report

2009



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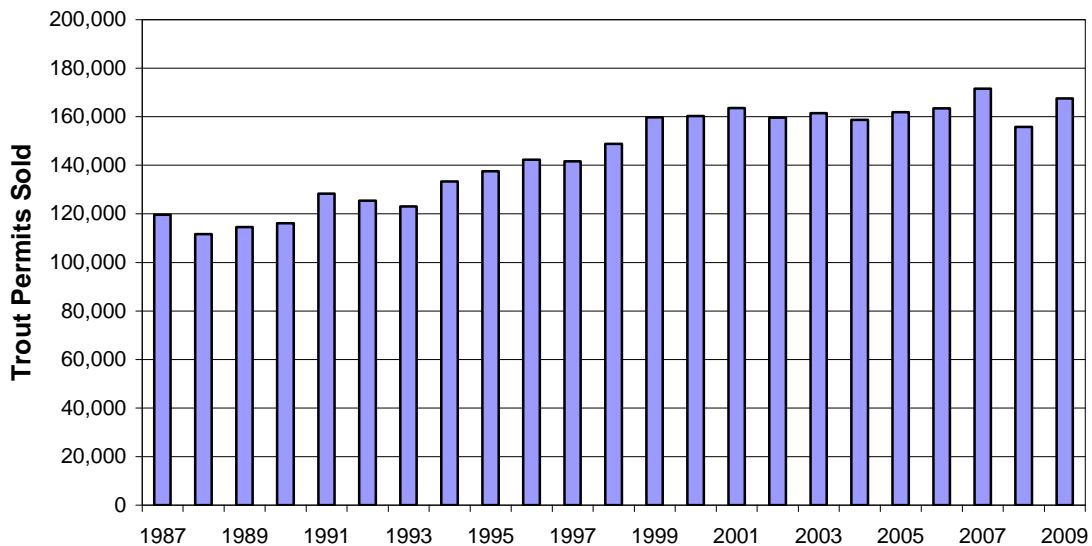
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Trout Permits

During the fiscal year ending in June 2009, approximately 167,479 trout permits were sold in Arkansas (Figure 1). This figure represents a 7% increase in trout permit sales from the previous year and a 3% increase over the 5-year running average. Sixty-five percent of the trout permits were sold to residents of Arkansas and 35% of the permits were sold to non-residents. The percentage of non-resident trout anglers in 2009 is slightly lower than the percentage of non-residents observed in previous years (approximately 40%).



Beaver Tailwater

The annual population sample on Beaver Tailwater was conducted in September 2009 by Trout Program and District 1-Fisheries personnel. Overall catch rates of rainbow trout and brown trout in September were similar to levels observed in 2007, but changes to the size structure of both populations are now evident. In 2006, shortly after implementation of the 13-16 inch protected slot limit, the percentage of rainbow trout that fell within the slot limit was around 7% and none were above 16 inches; in October 2007 a change was still not evident and no samples were collected in



2008 due to high water. As of the 2009 sample, there has been less than a 1 inch increase in mean size of rainbow trout since 2006 (which is not significant from a management standpoint)(Figure 1). However, the proportions of fish within (23%) and above (1%) the slot limit are much higher than in 2006.

Proportions of brown trout within and above the slot are inconsistent from year to year, and likely fluctuate in response to when fish were stocked in the tailwater (Figure 2). However, the average size of brown trout has increased by nearly 2 inches since 2006. These data are some evidence that both populations are exhibiting positive responses to the new slot limit and stocking changes, but additional information on growth and mortality will be beneficial to evaluating the ultimate success or failure of the regulation.

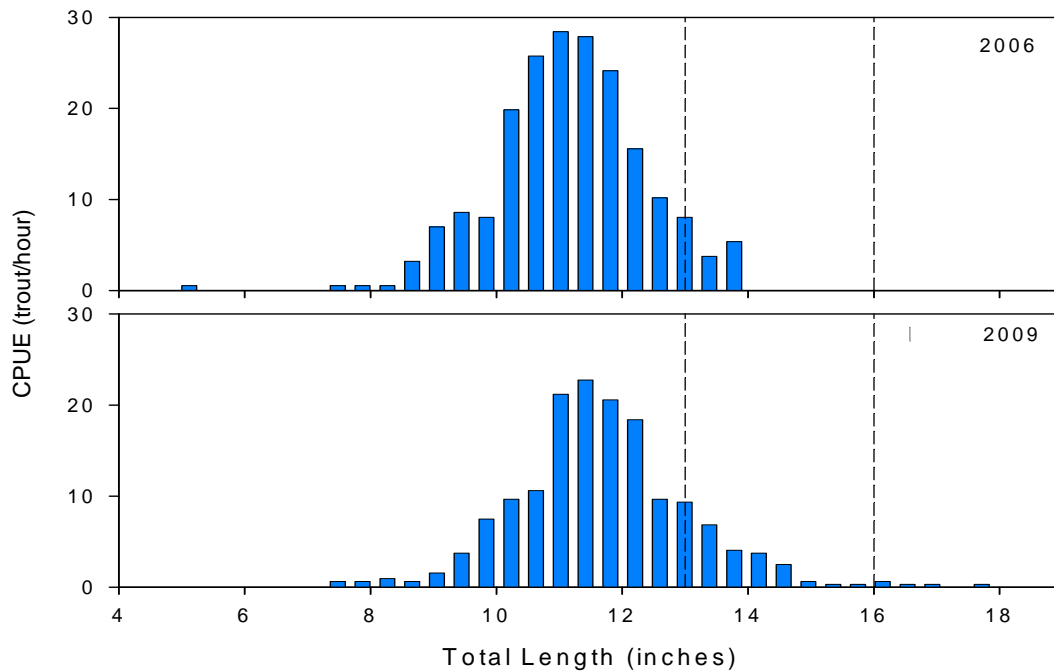


Figure 1. Catch per unit effort (CPUE) of rainbow trout collected in 2006 and 2009 from Beaver Tailwater during annual electrofishing surveys. Dashed lines represent the 13 to 16 inch slot limit on the tailwater.

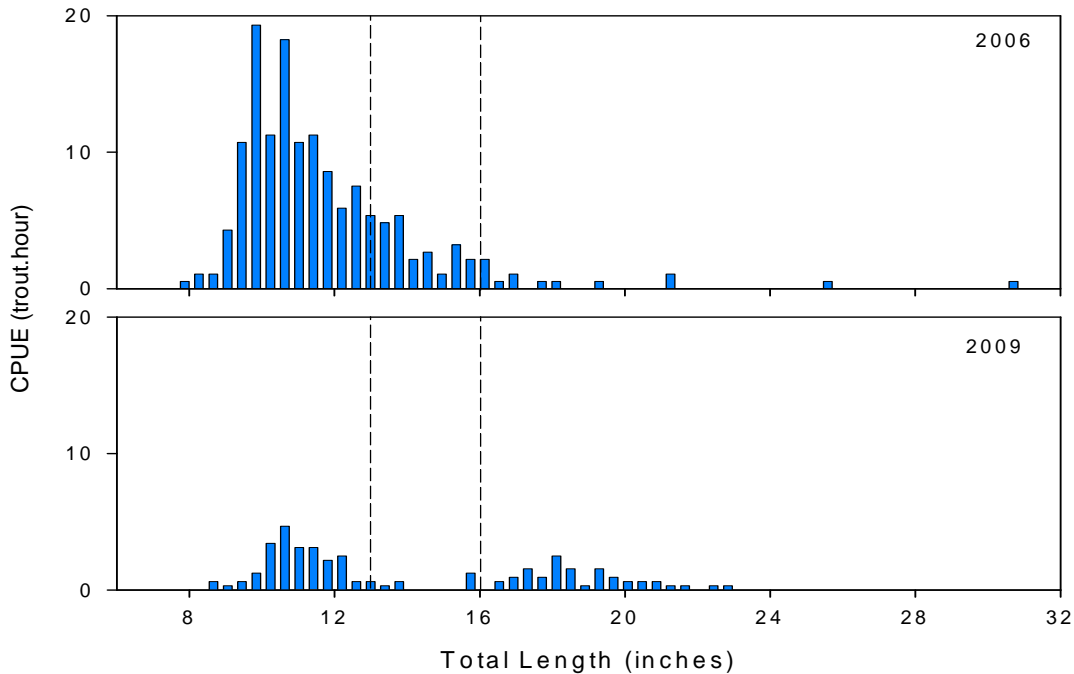


Figure 2. Catch per unit effort (CPUE) of brown trout collected in 2006 and 2009 from Beaver Tailwater during annual electrofishing surveys. Dashed lines represent the 13 to 16 inch slot limit on the tailwater.

With that in mind, the Trout Program initiated a study in 2009 aimed at evaluating growth and mortality of rainbow trout in Beaver Tailwater. In July, approximately 8,200 rainbow trout were fin clipped and tagged in the snout with a wire tag prior to stocking. In November, around 5,200 rainbow trout were stocked after being tagged in the dorsal area. The unique tag locations allow for identification of study fish (by cohort) in the field. Our thanks go out to the folks at the Norfolk National Fish Hatchery for their assistance.



Shortly after the July cohort was stocked, Trout Program and District 1-Fisheries personnel started conducting monthly electrofishing samples to recapture tagged trout. Figure 3 shows the electrofishing catch-per-unit effort (CPUE) of both cohorts from July through December. The regression model (also known as a catch curve) for the July cohort indicates that at approximately 5 months post-stocking, mortality of those rainbow trout will be approaching 100%. Although we need to perform additional monthly samples to develop a catch curve for the November cohort, the initial mortality of the

November cohort was not as high as that of the July cohort. This is not surprising, as we expect survival of the cohorts to differ by season, especially because factors such as angling pressure and harvest also differ by season and directly affect overall survival. A concurrent creel survey will allow us to estimate what portion of the total mortality we have observed can be attributed to harvest of trout by anglers each season.

Length data from the July cohort indicates little growth (less than 1 inch) has occurred between July and December. At this rate, it would take a rainbow trout stocked at 11 inches 1.5 years to grow into the slot limit and over 3 years to grow out of it. This evidence of slow growth of rainbow trout is consistent with results from previous work conducted on the Beaver Tailwater by AGFC personnel. Unfortunately, the combination of slow growth and high mortality rates within the rainbow trout population could ultimately limit the effectiveness of the slot limit to produce larger rainbow trout. Brown trout growth, on the other hand, is much faster than that of rainbow trout. Preliminary estimates from the current study indicate that brown trout growth in this system is at a rate of 6 inches per year, which is similar to the rate that was estimated in 2007 (5.5 inches/year).

Additional cohorts of tagged rainbow trout will be stocked in February 2010 and May 2010 to obtain further information on seasonal growth and mortality of stocked rainbow trout. We will begin collecting information on brown trout seasonal growth and mortality in January 2011 using the same protocol as the rainbow trout study. Results from both of the studies will be used to evaluate the effectiveness of the 13-16 inch slot limit and will serve as guides for future management efforts on Beaver Tailwater.

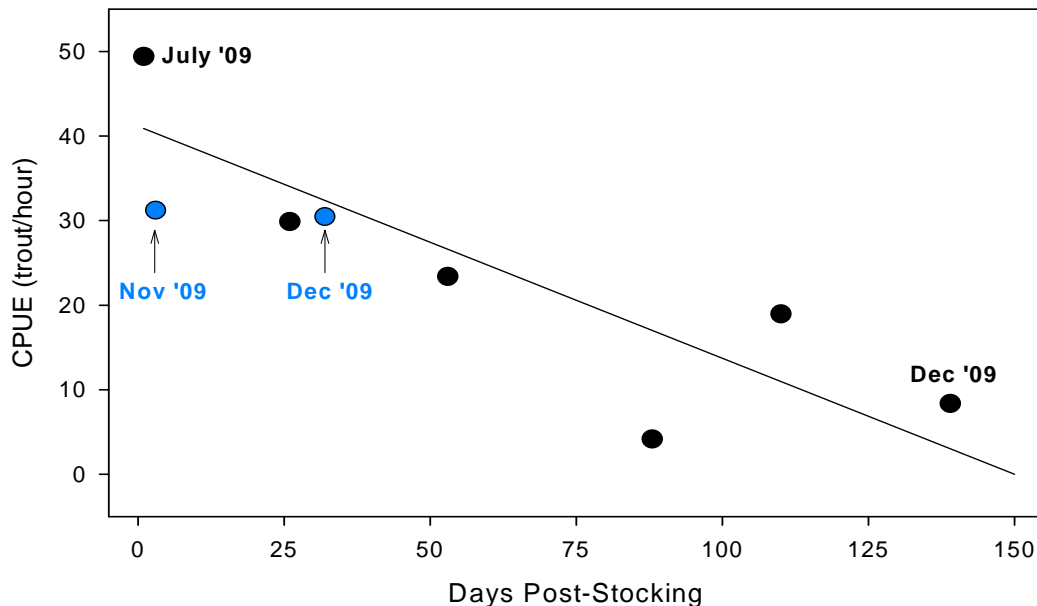


Figure 3. – Catch per unit effort of tagged rainbow trout sampled from beaver Tailwater from July 2009 to December 2009. Monthly CPUE estimates are included for the July cohort (black circles) and the November cohort (blue circles). The solid line is the catch curve for the July cohort.

Bull Shoals and Norfolk Tailwaters

2009 Norfolk Tailwater Population Sample - Early in 2009, a sample was conducted on the Norfolk Tailwater to take a look at the trout population following flooding events in 2008. Comments from anglers following the floods revealed concern that the trout population had been negatively impacted. Figure 4 shows the length distribution of rainbow trout observed during the 2009 sample. These fish ranged in length from 8-17 inches with an average length of about 12 inches. Both the average length as well as the relative abundance of rainbow trout in the 2009 sample were similar to that observed in samples prior to flooding. Brown trout collected in April ranged in length from 6-28 inches with an average length of 11.9 inches (Figure 5). The average length of brown trout in the 2009 sample was slightly lower than that observed in the 2008 sample. However, this is likely due to the abundance of juvenile brown trout that were stocked in January-February 2009. Population samples are generally conducted in the fall of the year when stocked cohorts of brown trout have had a longer time to grow. Sampling in April when these fish had less time to grow likely artificially reduced the average length when compared to samples conducted in the fall. Furthermore, the catch rates of brown trout > 16 inches (24 trout/hour) and > 20 inches (4 trout/hour) were similar to those in previous years. These results suggest that the trout populations in Norfolk Tailwater survived the flooding events of 2008 relatively well.

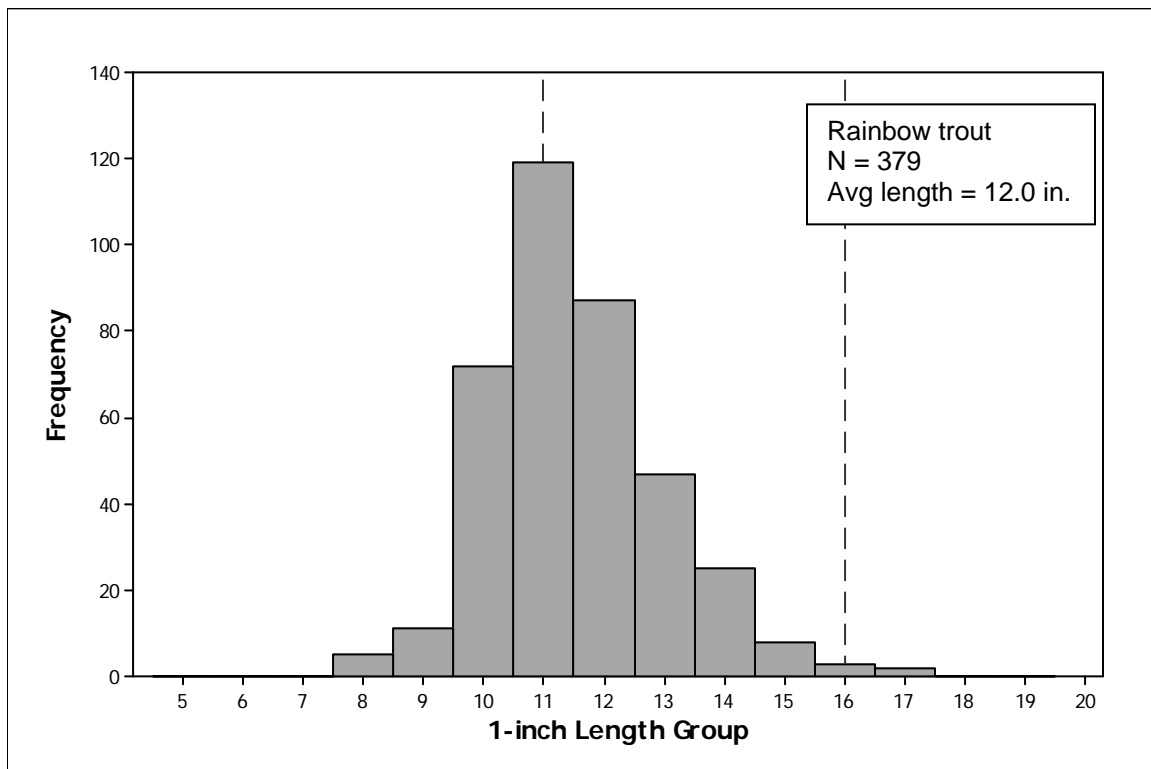


Figure 4. Length distribution of rainbow trout collected in April 2009 from Norfolk Tailwater.

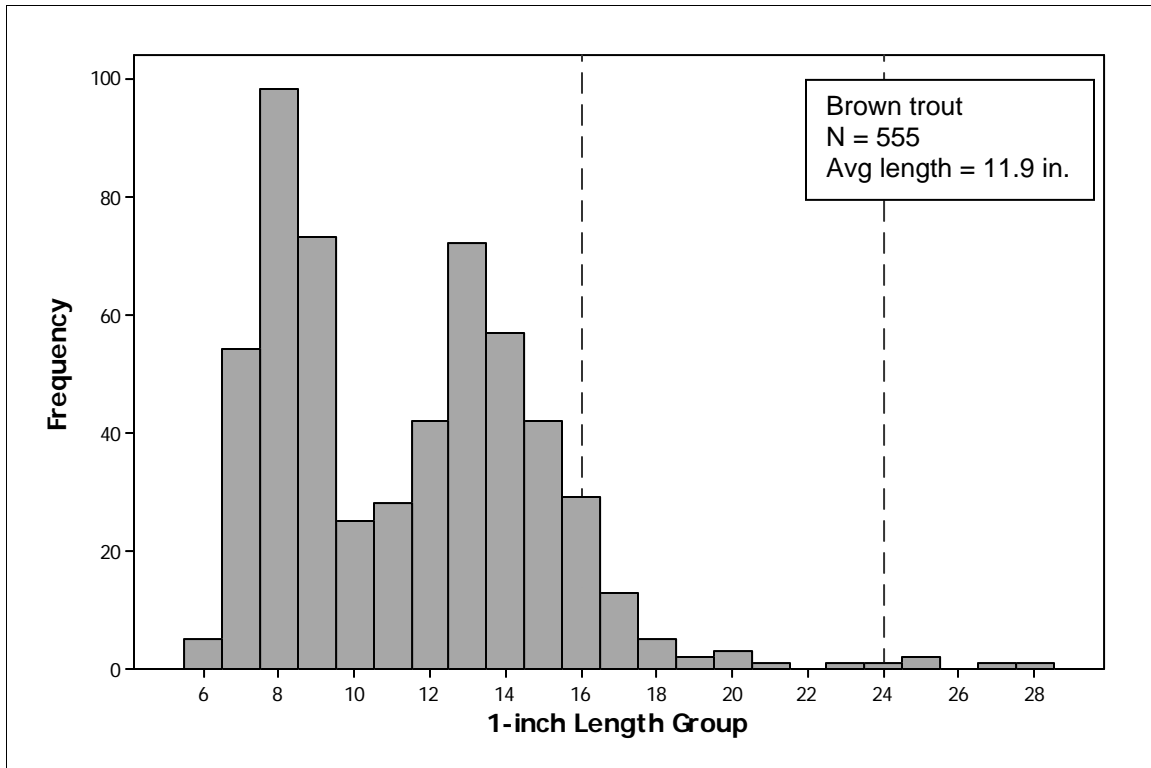


Figure 5. Length distribution of brown trout collected in April 2009 from Norfolk Tailwater.

Bull Shoals & Norfolk Tailwaters Creel Survey - At the end of August 2009, the 2008-2009 creel-year ended for the ongoing Bull Shoals and Norfolk Tailwaters creel survey. During this period, 91 aerial counts were performed with which to estimate the amount of angling pressure directed at these fisheries. Additionally, 810 angler interviews were conducted at access points along the tailwaters. Information gathered from the interviews allows estimation of angler catch and harvest rates, the level of angler satisfaction with these success rates, and additional demographic characteristics.

Preliminary results indicate that between September 2008 and August 2009, anglers spent approximately 850,000 hours fishing the Bull Shoals Tailwater and nearly 134,000 hours on Norfolk Tailwater. Although similar to the 2007-2008 creel year, the angling effort estimates for the 2008-2009 creel year are substantially lower than those observed for 2006-2007. The lower angling effort observed in recent years is most likely a result of the high water releases from both dams since spring 2008. Boating effort accounted for most (85%) of the angling effort on Bull Shoals and nearly half (49%) of the effort on Norfolk. Angling effort on both rivers was generally highest in spring or summer and lowest in winter (Figure 6).

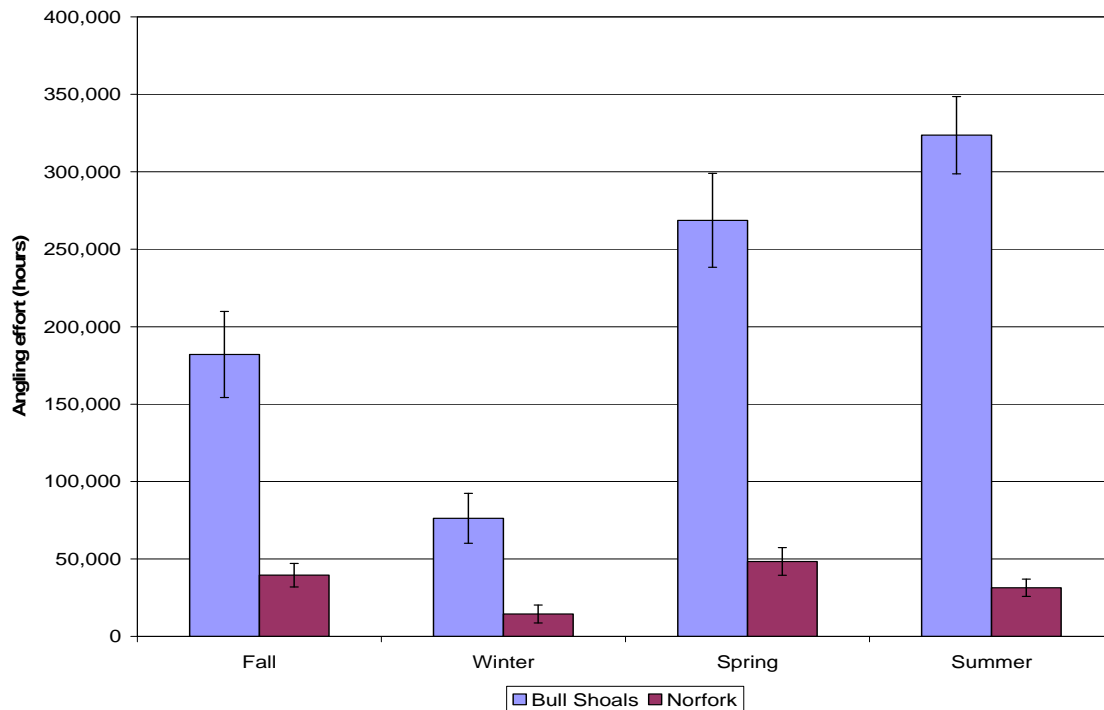


Figure 6. Seasonal angling effort on the Bull Shoals and Norfolk Tailwaters for the 2008-2009 creel year.

Norfolk Tailwater Cohort Marking – In December 2009, approximately 21,400 brook trout and 13,000 brown trout were stocked into the Norfolk Tailwater. Prior to stocking these fish were marked with an adipose fin clip to allow for later identification in the field. By comparing the relative abundance and size at the time of stocking of marked fish to the length and abundance of these fish in subsequent electrofishing samples, we can calculate growth and mortality rates for these cohorts. Our thanks go to the folks at the Greens Ferry and Norfolk National Fish Hatcheries for their cooperation and assistance in this endeavor.



Greers Ferry Tailwater



The annual population sample on Greers Ferry Tailwater was conducted over several nights in October 2009. Heavy flood releases from Greers Ferry Dam made scheduling the samples difficult and it ended up taking nearly the entire month to get necessary water levels. Because we were getting near the peak spawning period for brown trout on Greers Ferry we chose not to sample at the Jons Pocket or Mossy Shoals sites.

A preliminary analysis of the data was performed later in 2009. Results suggest that the average length of rainbow trout observed during the sample was 300 mm (11.8 inches), which is only slightly higher than the 11-inch average size at stocking for this species (Figure 6). Few rainbow trout collected fell within the 406-610 mm (16-24 inch) protected slot limit and no rainbow were larger than 24 inches.

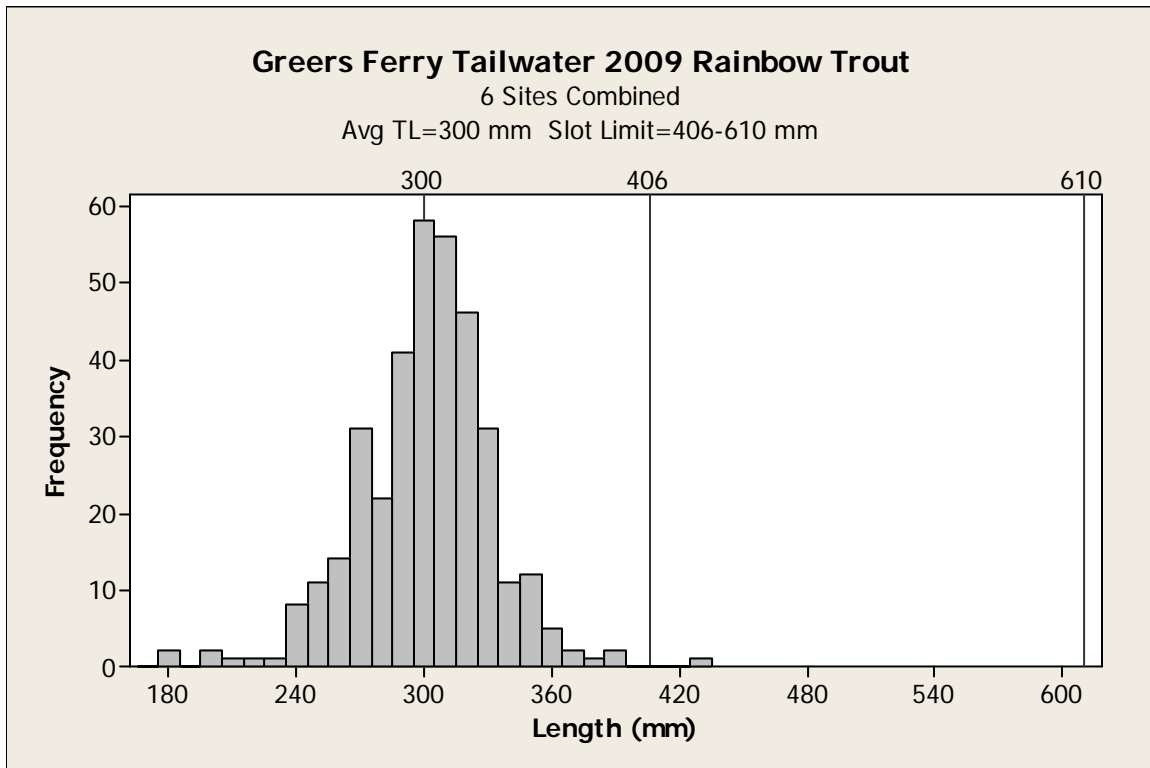


Figure 6 - Length frequency for rainbow trout collected during electrofishing samples on Greers Ferry Tailwater in October 2009.

Brown trout observed during the 2009 sample on Greers Ferry Tailwater ranged in length from 5 to 26 inches in length (Figure 7). The average length of brown trout was 374 mm (14.7 inches), which was slightly higher than that observed in 2007. Approximately 21% of the brown trout observed during the sample was within the 16-24 inch protected slot limit and < 1% was larger than 24 inches. The proportions of brown trout within and above the protected slot observed in 2009 were very similar to the proportions observed in 2006 and 2007.

These preliminary results that the rainbow trout and brown trout populations below Greers Ferry Dam have not responded significantly to the slot limit regulation implemented in 2007. Monitoring of the populations over the next couple of years through annual sampling will be necessary for an accurate evaluation or regulation. Additionally, data on trout growth and mortality on Greers Ferry will help to determine what factors may be limiting the success of this regulation in improving the length distribution of the populations. The Trout Management Program will initiate a tagging study and a concurrent creel survey in 2011 to examine these population characteristics.

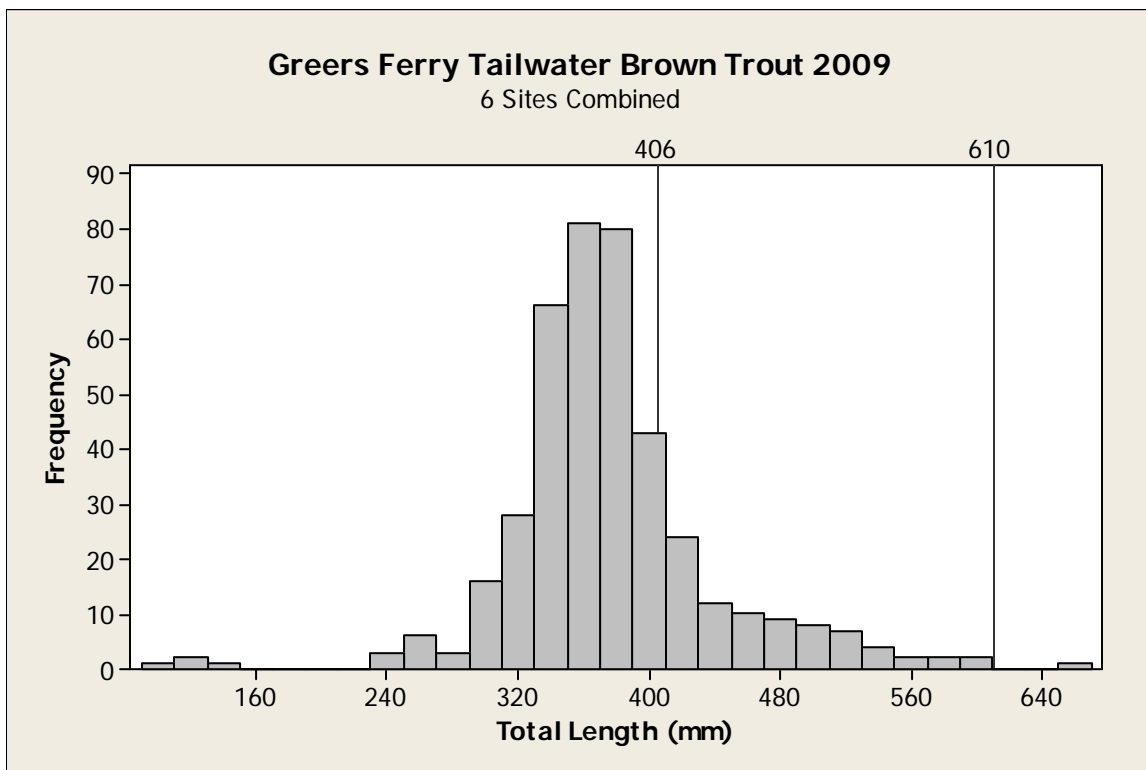


Figure 7 - Length frequency for rainbow trout collected during electrofishing samples on Greers Ferry Tailwater in October 2009.