

Bring Back the Natives

Le Conte-Pilkey Creek Brook Trout Restoration Project (99-017-015)

Final Programmatic Report



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Summary

The Le Conte-Pilkey Creek Bring Back the Natives Restoration Project (99-017-015) is complete. We are pleased to report that we have reintroduced southern strain brook trout (*Salvelinus fontinalis*) into Le Conte and Pilkey Creeks and assessed the habitat, aquatic insect, and water quality profiles of Winding Stair Branch, Gunter Fork of Big Creek, and Cannon Creek for future brook trout restoration. Electrofishing techniques, during four removals, were used to eradicate non-native rainbow trout (*Oncorhynchus mykiss*) from 2.24 km (1.4 mi) of Le Conte Creek in July and August of 1998 and 1999. In September 1999, we reintroduced southern strain brook trout, from the Cosby Creek watershed, into Le Conte Creek. Habitat and aquatic insect surveys were completed in Le Conte and Pilkey Creeks and long term monitoring and survey programs were also implemented for these two streams. Finally, In Pilkey Creek, a plan to evaluate reproductive success of southern strain brook trout was implemented.

Le Conte Creek

Rainbow Trout Removal

Le Conte Creek was divided into 27 sites that were each about 100-m in length. A total of 584 rainbow trout were removed from Le Conte Creek and placed in another stream or below a milldam. The milldam, which served as a fish barrier, was located on Le Conte creek at the lower end of site #1. Tennessee Wildlife Resources Agency (TWRA) supplied equipment and technical support for transporting the fish to other streams. On the first removal 495 (85%) rainbow trout were extracted, 61 (10%) on the second, 21 (4%) on the third, and 7 (1%) on the fourth removal. Out of the 495 fish on the first removal, 12% (59) were young-of-the-year (YOY) rainbow trout and 88% (436) were adult. On the second removal, 41% (25) of the 61 rainbow trout were YOY and 60% (36) were adult. Low flows during the 1998 season allowed a higher capture and removal rate of the non-native rainbow trout. Therefore, only 28 trout were collected from the third and fourth removals and they were all adult. The goal of stopping rainbow trout reproduction during the first year of the project was achieved.

Non-game Fish

No non-game fish [longnose dace (*Rhinichthys cataractae*) and blacknose dace (*Rhinichthys atratulus*)] were collected upstream of site #10 (~1000 m above barrier). Mean gradient of sites 1-9 was 8% while sites 10-27 had a mean gradient of 14%. Higher gradients in the upper stream reaches (sites 10-27) could eliminate longnose and blacknose dace preferred habitat. Longnose dace numbers remained constant from the first to the fourth removal while blacknose dace numbers actually increased (Table 1).

Table 1. Non-game fish numbers collected during the Le Conte Creek brook trout restoration 1998-1999.

Species	Removal 1	Removal 2	Removal 3	Removal 4
Longnose Dace	13	6	5	13
Blacknose Dace	241	193	109	271

Brook Trout Introduction

Using backpack electrofishing techniques, Southern Appalachian strain brook trout were taken from Cosby Creek watershed and placed into Le Conte Creek in September 1999. A total of 320 trout were weighed, measured, and marked with an adipose fin clip. One hundred eleven were taken from Cosby Creek, 102 from Greenbrier Creek, and Indian Camp Creek had 103 brook trout removed. The trout were placed in five-gallon buckets and transported by hand to TWRA's stocking truck. TWRA took 5 brook trout for research purposes and 6 fish died during the transport/transfer. A total of 309 brook trout were released into four sections of Le Conte Creek which covered eleven of the twenty seven-100 m sample sites (Table 2).

Table 2. Summary of Le Conte Creek stream sections and sites in which brook trout were released on 9-27-99.

		<i>Number of Brook Trout</i>	
Section	Site Number	Number Released	Released in Section
4	23	24	49
	24	25	
3	17	37	62
	16	25	
2	12	26	100
	11	24	
	10	25	
	9	25	
1	4	33	98
	3	33	
	2	32	
TOTAL			309

Pilkey Creek

Due to logging and settlement activities, Pilkey Creek, a tributary to Fontana Reservoir, has been void of brook trout since around 1900. A natural barrier, located ~300 m upstream of the reservoir, prevented invasion of non-native trout. In August 1998, 180 brook trout were collected from upper Hazel Creek and weighed, measured, and marked with an adipose fin clip. Using containers mounted on backpack frames, trout were carried to trucks and placed in coolers that were supplied with pure oxygen. Fish were then driven to a boat on the Hazel Creek embayment and taken to Pilkey Creek. An ATV was used to take 177 brook trout up Pilkey Creek where they were released by hand into three sections. The lower section had 50 fish released, 57 were released in the middle, and the upper section had 70 brook trout released. Each section was approximately 200 m in length and, overall, encompassed nine of the fifteen-100 m sample sites. North Carolina Wildlife Resources Commission supplied equipment and technical support for transporting the fish. A total of three fish died during the transporting process.

Survival and reproduction were assessed August 9, 1999. About 1500 m of stream were surveyed using three-pass and one-pass depletion techniques. Adult brook trout survived well and migrated upstream at least 400 m above where they were initially placed. Young of the year brook trout were found in the first 1000 m of the stream indicating brook trout successfully spawned the fall which they were released. An estimated 182 brook trout are surviving well in Pilkey Creek. About 60 % of the brook trout are YOY and 40% are adult. Based upon data from similar re-introduction projects in the Smokies, the population of brook trout in Pilkey Creek should continue to increase again this year.

Partnership Acknowledgement

This project was enabled by Bring Back the Natives which is a cooperative effort between the National Fish and Wildlife Foundation, the Bureau of Reclamation, U.S. Fish and Wildlife Service, and Trout Unlimited to restore native aquatic species and their habitats through local and regional partnerships.

Agency and Volunteer Hours

Many agencies and volunteer groups worked together to assist NPS staff with the Le Conte-Pilkey Creek Bring Back the Natives Brook Trout Restoration Project (99-017-015). Without monetary and volunteer labor assistance from these agencies, these types of projects would be impossible. A total of 1390 person hours were needed to successfully complete this project (Table 3). There are also many hours of “behind the scenes” labor by Trout Unlimited that does not get recorded.

Table 3. Agency and volunteer person hours during the Le Conte-Pilkey Creek brook trout restoration project 1998-1999.

Agency/Volunteer Group/Organization	<i>Person Hours per Stream</i>		Total
	Le Conte Creek	Pilkey Creek	
Inter Agency (NPS other than fisheries)	20	0	20
Trout Unlimited	755	39	794
Tennessee Brookies	21	0	21
Tennessee Wildlife Resources Agency	223	0	223
North Carolina Wildlife Resources Commission	0	45	45
Student Conservation Association	112	68	180
National Fish and Wildlife Foundation	9	0	9
Friends of the Great Smoky Mnts. Nat. Park	36	0	36
Tennessee Technological University*	20	12	32
Western Carolina University	30	0	30
Grand Total	1226	164	1390

* Tennessee Technological University is conducting other research on these streams. Hours only include cooperation with NPS part of the project.