

## **The Restoration of Bonneville Cutthroat Trout in Clear Creek, Utah**

Clear Creek is one of the largest tributaries of the Sevier River in Utah's Bonneville Basin. The Clear Creek drainage (which includes several tributaries) encompasses 65 miles (105 km) of trout habitat (Fig. 1). Widespread losses of trout throughout the drainage following the 2010 Twitchell Canyon wildfire prompted officials from the Utah Division of Wildlife Resources (UDWR) and Fishlake National Forest (FNF) to modify previously finalized plans for restoration of Bonneville cutthroat trout (BCT). While a 2007 Environmental Assessment (EA) identified three of Clear Creek's tributaries as suitable for BCT restoration, the project was expanded to the entire drainage once it was known that post-fire ash flow and flooding had removed or eradicated non-native rainbow and brown trout from much of Clear Creek and its largest tributaries. From 2011 to 2014, rotenone was applied to 61 miles (98 km) of stream in the drainage to remove remaining non-native trout.

The new, larger restoration project presented challenges in the need to isolate the Clear Creek drainage from re-invasion by non-native trout inhabiting the Sevier River. Most previous native cutthroat restorations in southern Utah were conducted in small streams and were protected from non-native trout by small fish passage barriers made from loose rock. Clear Creek's size and flow – in addition to the lower stream's confinement between a county road and interstate highway – dictated that a much larger barrier would have to be designed and built. In 2013, UDWR received \$34,000 from the Western Native Trout Initiative (WNTI), which was applied to design and engineering of the fish passage barrier (Table 1). (\$5,000 of this award remains unallocated and will be used to complete outreach efforts to educate the public about the project.) In 2014, an additional \$35,000 award from WNTI was paired with funds from the National Fish Passage Program, Utah Blue Ribbon Fisheries Council, and Utah Habitat Council to construct the barrier from cast concrete (Fig. 2). The total cost of construction amounted to \$200,752. In total, WNTI contributed \$69,000 to the Clear Creek project.

BCT were stocked throughout Clear Creek and its tributaries from 2012 to 2016. The fish passage barrier protects 65 miles of stream from invasion by non-native fish. This restoration project increased the level of historic habitat occupied by BCT in the Southern Bonneville Basin from 10% to 14%. This is a significant step forward in BCT conservation. Clear Creek also now sustains the largest population of native cutthroat trout in southern Utah by a factor of three. This is the most expansive native cutthroat trout restoration in Utah. Four other native fish species (mottled sculpin, mountain sucker, speckled dace, and southern leatherside) have been able to re-establish and expand in Clear Creek following the removal of non-native trout. In fact, the southern leatherside (designated as a species of concern by the state of Utah) has been restored to Clear Creek after years of absence. The Clear Creek drainage now represents the largest stream drainage in the state of Utah inhabited solely by native fish species.

Additional activities completed as part of the Clear Creek project include habitat restoration in fire-impacted stream reaches and research on the effects of fires on streams and fish.

The Clear Creek BCT Restoration Project was completed through a cooperative effort by numerous entities: UDWR, FNF, WNTI, National Fish Passage Program, Utah Blue Ribbon Fisheries Advisory Council, Utah Habitat Council, Fremont Indian State Park, US Fish and Wildlife Service, Sevier County, Piute County, numerous private land owners, and Utah State University. One of the greatest benefits of the project is providing anglers the best opportunity to fish for native trout in southern Utah (Fig. 3).

Table 1. Summary of funding for the Clear Creek fish passage barrier.

Year	Source	Amount Funded	Expenditure	Remaining
2013	WNTI	\$34,000	\$29,000	\$5,000 <sup>1</sup>
2014	WNTI	\$35,000	\$35,000	\$0
2014	Fish Passage	\$35,000	\$35,000	\$0
2014	Blue Ribbon	\$64,000	\$64,000	\$0
2014	Habitat Council	\$64,000	\$64,000	\$0
2014	UDWR (in-kind)	\$2,750	\$2,750	\$0
WNTI Total		\$69,000	\$64,000	\$5,000 <sup>1</sup>

<sup>1</sup> – Will be applied to outreach efforts (eg. interpretive signs, brochures, etc.).

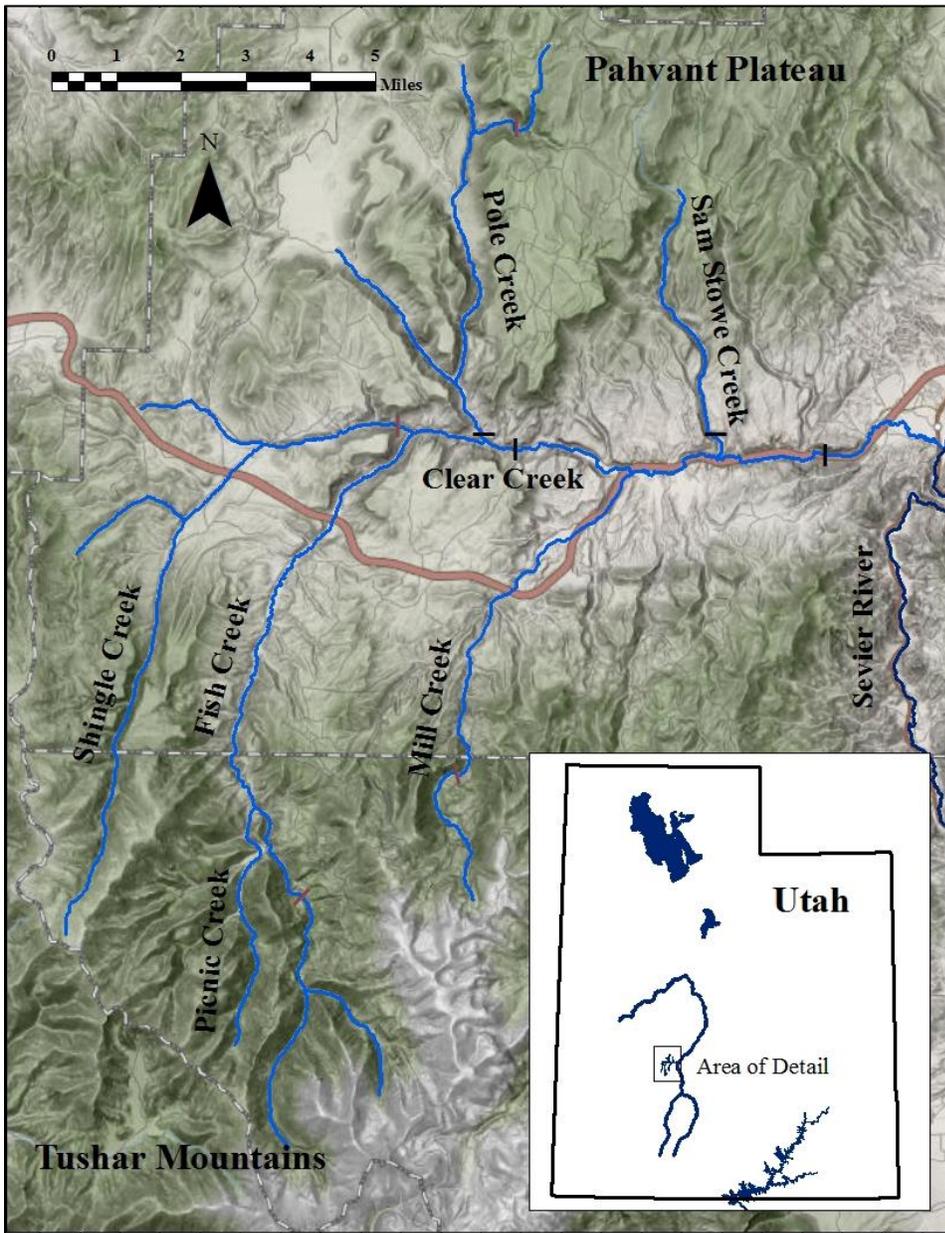


Figure 1. Map of the Clear Creek drainage, Utah.



Figure 2. Clear Creek fish passage barrier.



Figure 3. Bonneville cutthroat trout caught by an angler in Clear Creek.