



**COLORADO**

**Parks and Wildlife**

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Ms. Sponholtz,

The Conservation Plan for Rio Grande Cutthroat Trout in Colorado (Colorado Division of Wildlife, 2004) outlines the importance of determining genetic purity and classification of all RGCT conservation populations and potential RGCT conservation populations. Early molecular methods proved capable of identifying introgression with rainbow trout or Yellowstone cutthroat trout, but separation of the three native cutthroat trout subspecies found in Colorado remained elusive. Recent developments using amplified fragment length polymorphisms (AFLPs) allow geneticists to identify RGCT introgression with Colorado River cutthroat trout and Greenback cutthroat trout (Rogers, 2008). In this latest round of genetic testing we used the AFLP<sub>standard</sub> and AFLP<sub>rg-cr</sub> tests (Rogers et.al. 2011) to determine genetic purity of extant RGCT conservation populations and putative cutthroat trout populations. In some cases, DNA sequencing of the mitochondrial ND2 gene was used to verify AFLP results.

The 2012 National Fish Habitat Program project (F12AP00753) grant entitled “Genetic Assessment of Extant Rio Grande Cutthroat Trout Populations in Colorado” was funded with \$23,800 from NFHP and \$11,505 match from Colorado Parks and Wildlife. The NFHP grant funds are fully expended.

A total of 522 fin clip specimens were collected from 17 cutthroat trout populations and submitted to Pisces Molecular for genetic testing. Results of the tests documented 13 genetically pure RGCT populations (Table 1). The genetic purity information is required to correctly classify the population (core, conservation or recreation) as specified in the Inland Cutthroat Trout Protocol (UDWR, 2000) and Rio Grande Cutthroat Trout Conservation Strategy (RGCT Conservation Team, 2013). Additional DNA sequencing of the mitochondrial ND2 gene verified AFLP results on nine populations. Some of these populations may be selected for future brood stock development.

Sincerely,

John Alves  
Senior Aquatic Biologist

cc: Therese Thompson, Paula Nicholas



Stream	Year	Specimens	AFLP %				AFLP rg-cr %		ND2		
			RGCT	CRCT	YSCT	RBT	RGCT	CRCT	Specimens	RGCT	CRCT
Alamosito Creek	2013	30	100								
Bernardino Creek	2013	15	100						15	15	
Conejos River, Lake Fork (lower)	2013	30	100								
Conejos River, Lake Fork (upper)	2013	30	99	1							
Costilla Creek	2012	29					95	5	29	25	4
Costilla Creek, E & W Forks	2012	30					97	3	30	20	10
Cuates Creek (upper)	2013	30	100						20	20	
Cuates Creek (lower)	2015	30	100								
East Pass Creek	2014	30	100								
El Perdido	2013	30	100						20	20	
Glacier Creek	2012	29					97	3	30	29	1
Jaroso Creek	2013	30	100						29	29	
Las Cruces Creek	2015	30	100								
Nabor Creek	2014	30	100						30	30	
Placer Creek	2013	27	98	1	1						
Ricardo Creek	2014	30	100								
Roaring Fork Pond	2013	2		13	14	73					
Torcido Creek (upper)	2013	30	100						20	20	
Torcido Creek (lower)	2015	30	100								

Table 1. Summary of genetic tests results for RGCT conservation populations and putative cutthroat trout populations 2012-2015.

## Literature Cited

- Colorado Division of Wildlife. 2004. Conservation Plan for Rio Grande Cutthroat Trout (*Oncorhynchus clarkii virginalis*) in Colorado. Colorado Division of Wildlife, Denver, CO.
- Cutthroat Trout Management: A Position Paper. Genetic Considerations Associated with Cutthroat Trout Management. Publication Number 00-26, Utah Division of Wildlife Resources.
- RGCT Conservation Team. 2013. Rio Grande cutthroat trout (*Oncorhynchus clarkii virginalis*) Conservation Strategy. Colorado Parks and Wildlife, Denver, CO.
- Rogers, K.B. 2008. Using amplified fragment length polymorphisms to characterize purity of cutthroat trout in Colorado: results from 2007. Colorado Division of Wildlife, Fort Collins, CO.
- Rogers, K.B., J. Epp, and J. Wood. 2011. Development of an amplified fragment length polymorphism (AFLP) test to distinguish Colorado River from Rio Grande cutthroat trout. Colorado Parks and Wildlife, Fort Collins, CO.