# Executive Summary

Rio Grande Cutthroat Trout Wildfire Risk Assessment

As wildfires in New Mexico have become larger, more frequent, and more intense, the negative impact they have on natural resources has also increased. The Rio Grande cutthroat trout is a valued sportfish and species of conservation concern in New Mexico that is threatened by wildfires themselves and the flooding and debris flows that often occur afterward. Such catastrophic events can eliminate entire populations and leave stream habitats unsuitable to fish for several years. To better understand how wildfire could affect Rio Grande cutthroat trout, The Nature Conservancy was contracted to conduct a wildfire risk assessment for all known populations. This contract was completed and the finished product was received in June 2013.

Models using landscape scale variables (e.g., forest type, years since last burn) were developed to determine wildfire risk, the likelihood of a catastrophic flow event, and the intensity or severity of such an event. Overall risk was then calculated by combining these risk factors into a single index. The risk of wildfire, debris flows, and overall risk was determined for each Rio Grande cutthroat trout population, but also at the watershed scale (e.g., Upper Rio Grande, Canadian Headwaters). Final products of this contract included a map book, GIS files, and a written summary of the analysis methods.

Populations at Risk

High 30%
Moderate 14%
Low 1%
Extreme 56%
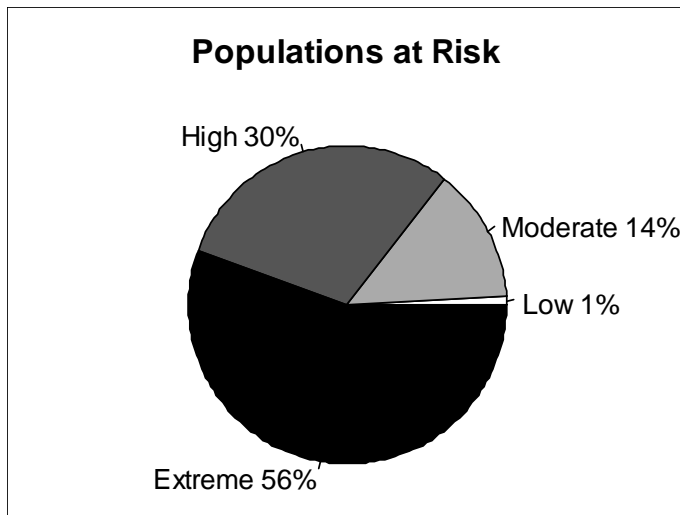
The models showed that 86 percent of Rio Grande cutthroat trout populations are at extreme or high risk of wildfire and catastrophic debris flows (Figure 1). In the Upper Rio Grande watershed, which contains 28% of all Rio Grande cutthroat trout water, all populations are either at extreme risk or the upper level of high risk of wildfire and debris flows. Only one population of the 118 total populations is at low risk. Such areas of low risk tended to occur at lower elevations, but most Rio Grande cutthroat populations occur at higher elevations.

Figure 1. Level of the risk of wildfire and debris flows to Rio Grande cutthroat trout populations.

Fisheries managers will use the information from this assessment to prioritize Rio Grande cutthroat trout management actions. For example, populations at extreme risk could be replicated in other streams to hedge for the possible loss of such populations by unpredictable wildfires. Measures to minimize wildfire risk (e.g., forest thinning) could also be implemented near populations that are at extreme risk. These products developed by The Nature Conservancy improved our understanding of the wildfire risks to specific Rio Grande cutthroat trout populations and will guide restoration and recovery efforts.