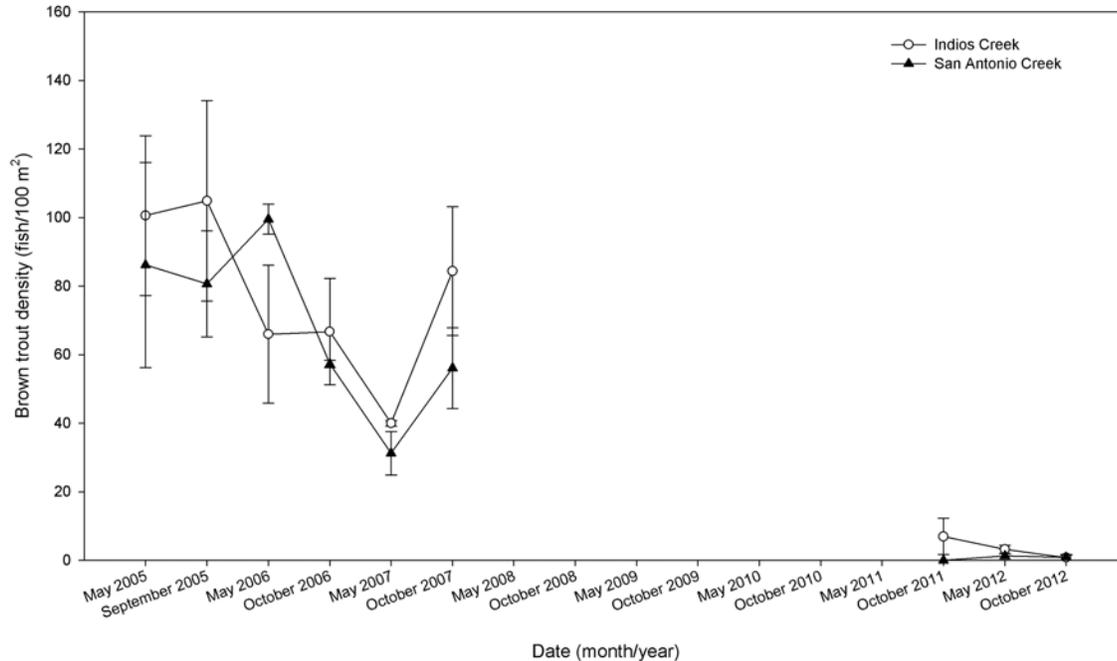


## Fire Ecology Graphs for Los Indios Creek and San Antonio Creeks

The Las Conchas Fire began on June 26, 2011 and burned one third of the Valles Caldera Preserve before it was contained. Large rain events called “monsoons” washed the ash and debris into the Rio San Antonio and the Rito de los Indios watersheds. Researchers wanted to assess the post-fire effects on the fish populations and determine the cause of the drop in populations. The research data was collected by:

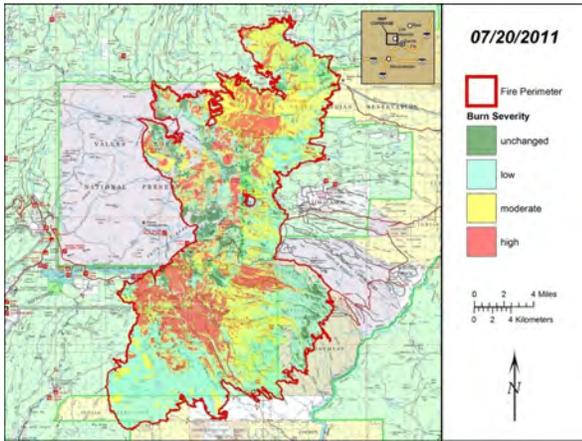
*Zeigler, Matthew<sup>1</sup>, Colleen Caldwell<sup>2</sup>, and Robert Parmenter<sup>3</sup>, Effects of the 2011 Las Conchas Wildfire on Fish Populations and Habitat in Meadow Streams of the Valles Caldera National Preserve, New Mexico. <sup>1</sup>Department of Fish, Wildlife and Conservation Ecology, New Mexico State University. <sup>2</sup>USGS Cooperative Fish and Wildlife Research Unit, New Mexico State University. <sup>3</sup>Scientific Services Division, USDA Valles Caldera National Preserve, Jemez Springs.*



The graph above shows “confidence intervals” for the fish population during monitoring. Researchers use confidence intervals to show that the numbers may vary within a range. Use the graph above to answer the following questions.

1. What is meant by the title of the y axis?
2. Which creek contained the highest density of Brown trout?
3. By reading the graph can you tell what years the Indios and San Antonio Creeks were not monitored?
4. The Las Conchas Fire took place on June 26, 2011. Interpolate between the dates and draw a vertical red line to represent the fire on the graph.
5. Approximately what was the density of Brown trout in Indios Creek in October 2011? What was the density of brown trout in San Antonio Creek?
6. What factors could have made the difference in Brown trout densities in San Antonio and Indios Creek?

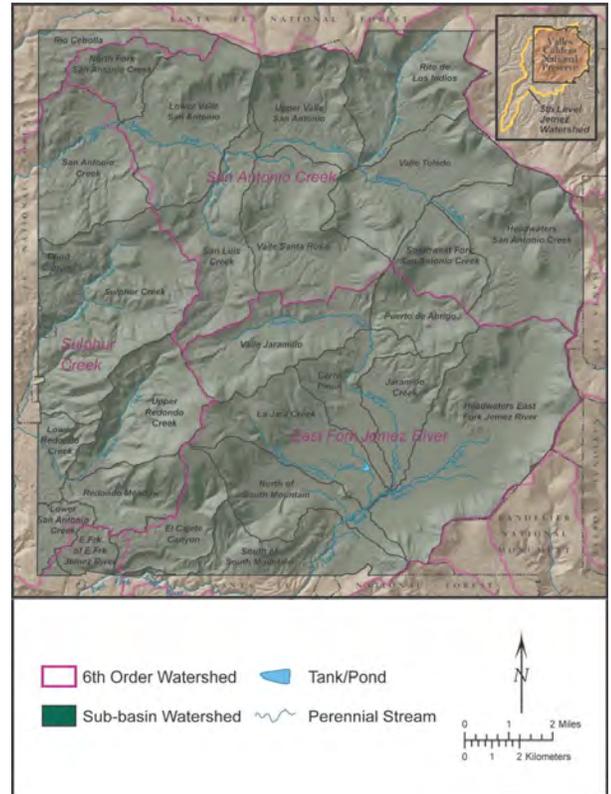
Using the two maps below what can you deduce about why the density of the Brown trout was even lower on the San Antonio Creek after the monsoon events?



**Fire Perimeter for the Las Conchas Fire** with a key to the burn severity in the region. Courtesy of Southwest Area Incident Management Team: Las Conchas 2011

**Valles Caldera Watershed Map** prepared for: Environmental Assessment San Antonio Watershed -Wetlands & Riparian Restoration VALLES CALDERA TRUST State of New Mexico Sandoval and Rio Arriba Counties

Photo courtesy of Bob Parmenter



Your group needs to:

Find the Rito de Los Indios and the San Antonio on the watershed map and determine the direction of flow for each creek.

Draw an arrow on the map to indicate the direction of flow.

Mark the confluence with an asterisk (\*) to show where both creeks merge.

Determine if either or both creeks were surrounded by high severity burns and which creeks may have carried the greatest debris, ash and soils down stream.

Discuss what kinds of conditions might reduce the Brown trout densities.

Draw a cross section (a simple sketch showing the possible depth and width) of the creek before and after the monsoons.

After examining the maps, research data represented in the graph and considering the impact of the heavy rain events, be prepared to share your ideas with the class during class discussion.

Notes for discussion: