

# Fire ash influences on aquatic primary producers through changes in water quality

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## Purpose of Study

The objective of this study is to determine experimentally the impact that pH changes and leachate compounds produced by wildfire ash have on diatom populations with implications on food resources and ecosystem health.

## Study Underway

Funded by a National Science Foundation NM EPSCoR grant, the student researcher's observational study in 2011-2013 indicated a shift in community composition and decrease in diversity of epiphytic diatoms (the major component of the algal community) in both short-term (two months) and long-term (two years) community composition following ash flows from the Las Conchas wildfire that burned the headwaters of the East Fork of the Jemez River (EFJR) in the Valles Caldera National Preserve. Due to the increased amounts of black carbon from the Las Conchas fire, there likely is an explanation in the altered water chemistry that explains the changes in the diatom community that was observed. With a multitude of chemical components entering aquatic ecosystems following a fire event, the student will focus on the effect of changes in pH on stream communities. He will experimentally manipulate pH and fire-ash leachate in diatom populations grown in culture. The diatom taxa in culture represent broad ecological groups which are common in the EFJR.

## Benefits

By isolating the impacts of pH from the impacts of complex fire ash, the student researcher should be able to determine if increases in pH or leachate play an important role for diatom growth following a fire. Due to the complexity of fire-ash flows and the response from a downstream community, it is important to isolate individual factors that can impact community structure and function.

*Alexander Clark services the automated water quality instruments during a high flow event in the East Fork of the Jemez River, downstream from his biological sampling site.*



*Alex Clark discusses the stream channel in the headwaters of the EFJR in the Valles Caldera, which has the burn scar from the Las Conchas fire as seen in the background. Clark is from Albuquerque and working on biology and chemistry degrees. This WRRRI student grant is helping him with his Honors project in UNM's biology department.*

