The Alamosa River Watershed: A Unique Proving Ground for Natural Selection

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The goal of this project is to describe the differences in macroinvertebrate species quantities, biomass, water quality, and dorsal brightness of plecoptera on several locations in the Alamosa Watershed. Examination of dissolved metals, nutrients, and pH/alkalinity/hardness/dissolved oxygen at the control site yielded the best water quality values. Water quality was poorest downstream of creeks that drain geologically altered sediments, and distance from these areas showed an improvement in water quality in the Alamosa River. Water quality at the mouth of Wightmen Fork (the creek draining the Summitville Superfund mining site) indicated the drainage is recovering from the leach pad/retention pond leaks in the late 1980's, but is still experiencing high levels of copper and zinc, placing stress on the aquatic fauna. Macroinvertebrates showed the greatest diversity at the control site, and several family groups were absent below the geologically altered creeks. Dorsal brightness (paleness) of several species of plecoptera seemed to correspond with substrate color, suggesting that these insects are responding to natural selection. This is significant because fish are either intermittent or completely absent from a large stretch of the middle mainstem of the Alamosa River, and this observed dorsal color pattern in stoneflies may indicate that fish may be migrating upstream from Terrace Reservoir, placing selective pressure on the stoneflies.

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