

WATER – POSTER #44

### **Grazing Impacts on Infiltration at Vernal Pools**

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Vernal pools are inundated depressions of land that are seasonally filled with water. They host rare and endemic plant and animal species and are sensitive to livestock grazing management and climate change impacts on hydrology and vegetation. Livestock frequently graze in vernal pools and can change environmental conditions by eating plant material and by compacting soil with their hooves. It is possible that grazing management may lengthen inundation periods and therefore mitigate predicted climate impacts on vernal pool ecosystems. This project involves studying grazing impacts on Sierra Nevada vernal pool ecosystems by using a large disk permeameter to measure infiltration rates in paired plots located inside and outside of fenced grazing exclosures. The vernal pools we studied were McKay North, McKay South, Spaulding and Spaulding West. We hypothesized that infiltration rates would be lower in grazed sites as compared to ungrazed sites because livestock hoof compaction may reduce soil pore sizes and hydraulic conductivity rates. Results show that for the McKay North and McKay South vernal pools, infiltration rates were slower in grazed versus ungrazed plots. For Spaulding and Spaulding West, there were no differences in infiltration rates between grazed and ungrazed plots. Overall, the measured infiltration rates for the observed soil textures were much higher than expected. Based on the results and without conducting more infiltration tests, it appears that grazing impacts do not affect infiltration rates in Spaulding and Spaulding West.