

Rocky Mountain Section - 68th Annual Meeting - 2016

Paper No. 10-7

Presentation Time: 8:00 AM-6:00 PM

INTERPRETING A HEAVILY BIOTURBATED TEPHRA FALL DEPOSIT AT KINGS BOWL, IDAHO

[TRCKA, Allison](#), Geosciences, Idaho State University, Pocatello, ID 83209, SANDMEYER, Erin, Geology, Idaho State University, Pocatello, ID 83209 and KOBIS NAWOTNIAK, Shannon, Idaho State University, Pocatello, ID 83209, trckalli@isu.edu

Kings Bowl is a pit crater created by a phreatic blast along a fissure in the eastern Snake River Plain (ESRP), Idaho. The eruption ejected ballistic blocks and fine grained tephra. The tephra fall deposit is located to the east of the vent and is mixed with eolian dust. In the summer of 2015, we conducted a tephrostratigraphic study on 23 holes within the tephra deposit as part of the NASA FINESSE project. Only one hole displayed any original tephrostratigraphy; the rest had been thoroughly mixed by extensive bioturbation. Samples collected from the holes were sorted by their grain size and composition (lithic, pumice, glass, or eolian dust). There was no pumice or glass found in any of the samples. Most of the histograms of the percent total mass showed a log-normal distribution consistent with a fall deposit, even though they represented mixed units. Most of the areas where the grain size distribution showed an irregular pattern were associated with breached levees on the Kings Bowl lava lake prior to the phreatic phase of the eruption; the resulting hummocky areas resulted in wind scour zones visible in aerial imagery. We found a weak correlation between the local deposit thickness and the percent eolian by mass; this can also be represented as a correlation between vent proximity and eolian percent. There were no other clear correlations, including between deposit thickness and maximum grain size. This is likely due to the extensive bioturbation and secondary wind scouring. The observed patterns suggest that the controlling factor in introduction of eolian dust to the tephra deposit came from preferential growth of vegetation-in the tephra. As dust-laden wind blew across the plain, the vegetation in the tephra deposit locally slowed air movement and caused dust to fall to the ground, where vegetation roots worked it into the tephra over time. More dust has been captured on the western, or thicker, parts of the deposit as they a) are on the windward side of the deposit, and b) would have been able to establish larger vegetation sooner than in the thin margins of the tephra fall unit.

Session No. 10--Booth# 31

[T13. Cenozoic Volcanism in the Inland Northwestern United States \(Posters\)](#)

Wednesday, 18 May 2016: 8:00 AM-6:00 PM

Clearwater Room (Idaho Commons Conference Center)

Geological Society of America *Abstracts with Programs*. Vol. 48, No. 6
doi: 10.1130/abs/2016RM-276203