

---

## ECOLOGICAL EVALUATION OF RECLAMATION SUCCESS OF MINE SITES OF THE SAPPHIRE MOUNTAINS

Jeremy Aal \*, Biology, Montana Tech, Butte

Sapphires and gems have been mined from the Sapphire range of southwest Montana for more than 150-years. Across this region and elsewhere, an unknown count of pits and tunnels and tailing piles lay abandoned while the local ecology reclaims the disturbed earth. A historical practice of reclamation for decommissioned mines was to bulldoze the site flat, removing physical hazards from the landscape. This process mixes the soil strata and alters the composition of the topsoil. Soil compaction is also a consequence of this process. Altered composition and significant increases in soil compaction often cause native plant species to struggle or fail to thrive in an area, causing opportunistic weedy species to proliferate. Our research investigated the species richness and coverage of three sites: a disturbed mine without reclamation, a mine site with bulldoze reclamation, and a third site in the vicinity which was not mined. Our multivariate analyses confirmed that species composition was different among the three sites. The natural site had higher plant cover, however, it was not significantly different from the other two sites due to the higher coverage of exotic weeds in the reclaimed sites. A greenhouse-controlled species competition supported this as soil from the reclaimed site was significantly better for knapweed test plants. Soils from the natural sites proved to be significantly better for native bluebunch wheatgrass growth. These results show that reclamation success does depend on initial site preparation, on the presence of exotic plant species that can be further spread by inappropriate site management. Also reclamation sites need to be managed if exotic invasion could be a potential.