

DEMIAN NUNEZ and MARK LESSER, Department of Biology, Shepherd University, Shepherdstown WV 25443. Growth response to surface mine reclamation in West Virginia.

Surface mining in West Virginia has a long history of erasing or damaging arboreal and limnetic ecosystems in the state. In addition to altering the topography of the land, runoff from surface mines causes a host of long term effects on the environment even years after mining activities have ceased. Acid mine drainage (AMD) is caused by weathering sulfide minerals such as pyrite that have been exposed to the elements from mining activity. AMD lowers the pH of soil and water and introduces dissolved heavy metals that are harmful to life and the environment. These metals include aluminum that is known to especially harmful to plant root development and subsequent growth. Trees growing in AMD contaminated watersheds have been shown to suffer decreased growth and species richness compared to those growing in uncontaminated systems. Sites suffering from AMD are often subjected to remediation efforts by environmental agencies such as the DEP, though the efficacy of some common remediation practices is not well understood.

We cored trees growing in proximity to old surface mines reclaimed by the DEP at different times over the past 20 years to establish a chronology of growth through stages of contamination and remediation. Five mines were chosen for the study. Two of them had not experienced any remediation efforts, while the other three completed abatement in 1996, 1997, and 2010. Results did not show an improvement in tree growth post remediation, suggesting that DEP abatement practices are ineffective long-term in terms of impacts on vegetation health.