

Acid mine drainage and stream recovery: Effects of restoration on water quality, macroinvertebrates, and fish



Acid mine drainage (AMD) is a prominent threat to water quality in many of the world's mining districts as it can severely degrade both the biological community and physical habitat of receiving streams. There are relatively few long-term studies investigating the ability of stream ecosystems to recover from AMD. Here we assess watershed scale recovery of a cold-water stream from pollution by AMD using a 1967 survey of the biological and chemical properties of the stream as a pre-restoration benchmark. We sampled water chemistry, benthic macroinvertebrates, and fish throughout the watershed during the spring and summer of 2011. Water chemistry results indicated that pH and total alkalinity increased post-restoration, while acidity, sulfate, and iron concentrations decreased. Watershed-level taxa richness, local taxa richness, biomass, diversity, and density of macroinvertebrates were significantly higher post-restoration; however, %EPT was not significantly different. Fish species richness, density, and brook trout density were all significantly higher post-restoration. These results provide clear evidence that both abiotic and biotic components of streams can recover from AMD pollution.

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