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Coal mining has played an important role in the history of West Virginia's economy, but it is also the cause of a major environmental issue called acid mine drainage (AMD). AMD is caused by heavy metals from abandoned mines running into waterways and soils. AMD is a concern because many of the areas affected by AMD flow into larger water sources that are used for drinking and recreation. This is a problem because individuals are unknowingly consuming greater amounts of heavy metals and this can cause kidney dysfunction, nervous system disorders, and vascular damage in humans. The purpose of our study was to determine if AMD affected the diversity and abundance of aquatic insects in the Morris Creek Watershed. Two locations were sampled, an AMD site and a limestone-treated site. Water samples and macroinvertebrates were collected at these locations. Species were identified in both areas, and we used DNA barcoding, to further identify the macroinvertebrates. Ultimately, the diversity and abundance of species was greater at the area treated with limestone. These results indicated that the AMD influences diversity and abundance of species. This is important because the diversity of the environment determines the health of the environment and because diversity boosts productivity. With the results of our study in mind, we propose further research be conducted to examine the best treatment options to combat AMD and to boost environmental diversity.

Key words: DNA barcoding, heavy metals, abundance, environmental disturbance