Using eDNA to Estimate L. terrestris Populations

Wald, Elliot (School: Joel E. Ferris High School)

Earthworms serve as important bioindicators for ecosystem health, helping track the effects of pollution on environments and organisms. The most common method for determining earthworm biomass requires digging large holes, applying chemicals to soil to aggravate deep burrowers, and hand-sorting through collected worm species to separate populations. The purpose of this experiment was to determine if the environmental DNA tracking technique is a viable option for determining the population of Lumbricus terrestris (the common earthworm) in a variety of environments. Samples were collected from three environments around Spokane, Washington: a tilled agriculture field, a sports field, and a coniferous forest. Environmental DNA was extracted from the samples, then samples with the highest concentration of eDNA were chosen for PCR and gel electrophoresis. L. terrestris DNA was detected from three different sites and in every environment, indicating that eDNA tracking has the potential to accurately and efficiently determine the relative populations of earthworms in place of traditional hand-sorting methods.

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