Effect of Burn Scars on Macroinvertebrate Biodiversity

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Biodiversity contributes to ecosystem stability and provision of favorable living conditions. One approach to increase biodiversity involves implementing restoration activities, such as burning buckthorn in large piles. This project investigated the recovery of macroinvertebrate biodiversity within woodland burn scars. For annual data, three soil samples per burn scar were collected from all four locations at LaBagh Woods. Each sample was 142.24cm apart. For weekly data, a sample was taken at each of the four scars in Harms Woods. Macroinvertebrates were collected in a 10x10x10cm soil sample using Berlese funnels. All captured specimens were recorded and identified to the genus with a microscope and peer review on iNaturalist. Then the Shannon-Weaver Index was used to calculate biodiversity. This value was compared to that found in the remnant (mostly natural), restored, and degraded (polluted and containing invasive species) ecosystems of the previous year's study. Compared to the one year scar (mean biodiversity 0.87, SD 0.23), the five year scar had higher biodiversity (1.67, SD 0.46). Additionally, the weekly scars increased from 0 (SD 0) to 0.51 (SD 0.32) by week two, 1.04 (SD 0.16) by week four, and 1.83 (SD 0.06) by week eight. Annually, biodiversity was higher in older scars with larger springtail populations. Weekly, biodiversity began to increase two weeks after the burn. Shortly after the introduction of springtails to the scar during the fourth week, biodiversity more than doubled and continued to rapidly increase for the remaining samples.

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