

# GRADUATE EXIT SEMINAR

**Josephine Duffy**

## Effects of Prairie Restoration on Carbon Stocks and Soil Compaction in a Reclaimed Mineland



Strip-mining has extensive impacts on vegetation and soil. Reclaimed mineland soils are often highly compacted and depleted of plant-available nutrients and organic matter. Such sites are often revegetated with low-diversity mixtures of non-native grasses and forbs. The combined effects of competitive non-native species and poor quality soils often creates challenges for restoration. Nevertheless, there is significant interest in enhancing the ecosystem function of former minelands to enhance biodiversity and carbon sequestration. We studied a reclaimed coal mine in eastern Ohio to determine whether prairie restoration in such settings would affect the recovery of key soil health indicators. Four prairies and adjacent unrestored grasslands were sampled along 100m transects that intersected perpendicular to the prairie patch boundary. We surveyed vegetation cover and aboveground biomass within eight 1m<sup>2</sup> quadrats spaced along each transect. Soil cores were collected at each quadrat along with penetrometer readings to measure soil carbon content, bulk density, and compaction. Results suggest that, while prairies yielded larger carbon stocks in plant biomass, effects on soil carbon and compaction were minimal. Future research should examine what site-specific factors may determine whether prairie restoration yields significant effects on soil health.

**Friday, June 21, 2024**  
**2:00 PM**

Advisor: Dr. Matt Davies

**Location:** Kottman Hall 245

**Join the seminar via Zoom:**

<https://osu.zoom.us/j/93405134150?pwd=JHOXJ2iL6xFm53NaBkGb4Puj2QyJwe.1>

Meeting ID: 934 0513 4150

Password: 921714

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