Reconstructing the vegetation history of a Piedmont prairie remnant

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An understanding of vegetation history is critical for the management and restoration of remnant habitats of conservational concern such as "Piedmont prairies." Over the last year, we collected three soil cores at Picture Creek Diabase Barrens (PCDB), a site thought to contain remnant Piedmont prairie vegetation, to begin to better understand the deeper time vegetation history of the area. Our first core measured 42 cm deep and was collected from a stand of Xeric Hardpan Forest over a shrink-swell soil not far from the powerline corridor that now contains many of the rare prairie-affinity plants at PCDB. With the support of a Shinn Grant, we obtained radiocarbon dates for a bottom (602-674 AD), middle (1246-1302 AD), and top (1807-1928 AD) section of the core. Stable carbon isotope analysis (Δ13C) suggests the location of this core was once dominated by savanna-like vegetation that experienced an essentially linear transition toward the now densely forested present-day vegetation. We are currently examining additional soil cores to understand whether savanna-like vegetation was historically limited to the somewhat rare shrink-swell soils present at the site or once also found on the adjoining, more typical Piedmont soils that are not currently known to host prairie-affinity plants.

Alexandria Szakecs with *Echinacea laevigata* (smooth purple coneflower) in the powerline corridor at Picture Creek Diabase Barrens. The stand of Xeric Hardpan Forest where we obtained the first core is behind her.