Vegetation Dynamics and Soil C and N Storage in an Oak-Juniper Savanna: An Isotopic Assessment. (S08jessup140225-Poster)

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Abstract:

Historical accounts suggest that C3 plants have increased in savannas of the Edwards Plateau of Texas over the past 150-200 years, but the nature and extent of these changes has been poorly documented. To test these historical accounts, we measured d13C in vegetation and soil for grasslands, live oak clusters, and Ashe juniper woodlands at a site in this region. d13C profiles for grasslands and live oak clusters increased with depth from litter to 30 cm (-20.8 to -13.2 o/oo, and -26.7 to -16.7 o/oo, respectively), though the values remained distinct between habitats at all depths. Soil d13C values from a juniper woodland also increased with depth, and at 30 cm the d13C values from the woodland edge (-13.6 o/oo) converged with those from grasslands (-13.2 o/oo). Results suggest that the relative contribution of C3 species (herbaceous and woody) has increased in each of these habitats over the past several hundred years. Furthermore, since woody patches were found to exhibit greater C and N concentrations, this change in the functional composition of the plant community has likely resulted in increased C and N stores at this site.

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