

Assessing mycorrhizal community differences within pinyon pines in the Four Corners region

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Climate change has created drought conditions across the Four Corners region which has increased mortality rates in pinyon pine (*Pinus edulis*). Pinyon pine is a culturally significant species to the Navajo Nation along with representing a critical resource for the pinyon jay, which is under review to be added to the endangered species list. Below-ground microbes can help mitigate the hotter, drier conditions created by climate change, however, these species composition and function of these microbes are poorly understood in pinyon pines within the Navajo Nation as research has not been geographically extensive. We propose to examine how ectomycorrhizal fungal (EMF) communities differ among soil types across the Navajo Nation to determine if there is a linkage between EMF communities and cone production in pinyon pines. We expect to find a positive correlation between *Geopora*, a fungus that promotes drought tolerance, abundance and pinyon cone production. Soil samples of approximately 250 milliliters will be collected from pinyon pines and a small amount will be reserved for DNA sequencing to determine all of the microbes present in the soil. Pinyon seedlings will be grown in the soil and their roots will be harvested and analyzed for ectomycorrhizal fungi that will be molecularly identified and examined to see how they differ across the range and among soil types that will be assessed using texture, bulk density and other variables. Understanding the importance of soil microbial communities to pinyon cone production could be important to restoration following climate related disturbances such as drought and stand-replacing fire.

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