

The Role of Population Genetics in Revegetation: Philosophy and Empirical Data

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Revegetation of disturbed wildlands has genetic and biodiversity implications. Revegetation usually has the primary goal of recovery of ecosystem function including protection of the soil resource. This may be accomplished by establishing an array of plants that may or may not include the suite and composition of the pre-disturbance plant community. In recent years, land managers and the public are more interested in restoring pre-disturbance vegetation after fires, construction, mining, and other disturbances. In restoring native vegetation to disturbed sites, population genetics issues need to be addressed. A principal question is "what are the consequences on residual plants either on the site or adjacent to the site?" In order to get at this question the breeding systems, genetic architecture, and genetic variation of the species that are used in the restoration plantings needs to be known both for the indigenous population and the source or restoration population. Our work is designed to address these issues. We are examining the population genetics of two grass, three shrub, and seven forb species used in restoration plantings by examination of within and among population genetic variation using isoenzymes, chloroplast haplotypes, anonymous nuclear markers, and genome analysis. Data analysis is continuing but preliminary isoenzyme analysis suggest that *Erigeron pumilis*, and *Erigeron umbellatum* both have higher within and among population variation than does *Atriplex canescens*. A survey of native *A. canescens* populations does reveal more variation than a seeded stand does in respect to its source population.