

ABSTRACTS – Oral Presentations

Keynote Speech

Genetic Considerations for Native Plant Materials Development

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The goal of plant restoration is the establishment of self-sustaining populations that are as capable of surviving stochastic and evolutionary challenges as healthy, natural populations. There are a number of important demographic factors to consider in restoration efforts, but most would agree that the provenance and genetic variability of source material play an important role in restoration success. In this talk we will discuss both quantitative and molecular genetic experimental approaches to determining appropriate seed transfer zones. We have applied both approaches to assess local adaptation and patterns of genetic variation in *Eriogonum* (buckwheat) and *Penstemon* (beardtongue) species in the intermountain west. In *Penstemon* spp. we have found interpopulational differences in floral morphology (presumably related to pollinator suites) and several other quantitative traits. In both taxa, we have found differences in seed germination characteristics related to population altitude and length of winter.

Genetics

Seed Zones for Maintaining Adapted Plant Populations

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Seed zones delineate areas within which plant materials can be transferred with little risk that they will be poorly adapted to their new location. They ensure successful restoration and revegetation, and help maintain the integrity of natural genetic structure. The value of seed zones is recognized in numerous policy statements from federal and state agencies. Results from common garden studies indicate that local sources are often best adapted to local environments, although the degree of local adaptation differs between species and between traits within species. Seed zones have been used for over 60 years in forest trees, whereas seed zones for grasses, forbs and shrubs used in restoration are largely lacking. We discuss several studies that have been completed or initiated to study adaptive genetic variation and the development of seed zones in species widely used in restoration in the western United States.