From Forest Nursery Notes, Summer 2011

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Kitzmiller, J. H. and Hanson, L. Native Plants Journal 12(1):45-60. 2011.

Patterns of adaptation in three native grasses in northern California

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ABSTRACT

Provisional seed transfer zones were developed for 3 Poaceae grasses, *Elymus glaucus* Buckley ssp. *glaucus*, *Bromus carinatus* Hook. & Arn., and *Bromus orcuttianus* Vasey, from a 4-y study with 11 reciprocal-transplant gardens across the Plumas National Forest. To conserve existing adaptive patterns, 4 seed zones were proposed for *B. carinatus* and *B. orcuttianus,* and six for *E. glaucus*. Adaptive traits of source populations were correlated with their geographic, climatic, and ecologic origins. Findings based on seed source x environment interactions and the geographic-climatic patterns for local, distant, and proximal-paired populations suggest that natural selective pressures have produced weak to moderate broad-scale local adaptation. Three consistent "coarse-textured" adaptive patterns emerged: 1) sources from mesic west-side and east-side ecological zones formed two well-differentiated groups; 2) sources from the broad intermediate area (west-side central and transition) were less differentiated and often intergraded with the mesic west-side (southwestern) and east-side (northeastern) groups; and 3) mesic west-side was divided into 2 elevation bands. Local adaptation was found less often on a finely tuned local scale.

Kitzmiller JH, Hanson L. 2011. Patterns of adaptation in three native grasses in northern California. Native Plants Journal 12(1):45–60.

KEY WORDS

seed transfer zones, local adaptation, *Elymus glaucus, Bromus carinatus, Bromus orcuttianus*, Sierra Nevada, Poaceae

NOMENCLATURE

USDA NRCS (2010)