



## Effects of Rainfall, Soil and Livestock Grazing on Dominance of California Rangeland by an Exotic Annual *Bromus* Species

Carla M. D'Antonio and Claudia M. Tyler; University of California-Santa Barbara; Contact Author Email: dantonio@es.ucsb.edu

Annual grasses in the genus *Bromus* have invaded a wide range of habitats in the United States including arid and more mesic rangelands in California. Individual species can occur across broad climate and soil conditions pointing to the need for site-specific management prescriptions and raising questions about the extent to which these species will be affected by climate change. We are conducting a long term study of the effect of winter/spring livestock grazing on composition in a California annual rangeland. Over a ten year period, climate had little effect on cover and productivity of the dominant exotic annual grass *Bromus diandrus*: it dominated ungrazed plots on rich soils across widely variable rainfall years suggesting it will be insensitive to climate change. At a nearby ungrazed site with sandy soils, the dominance of this species was sensitive to rainfall. Hence the response of this exotic annual species to rainfall interacts with soil conditions. By contrast, this species' dominance is influenced by livestock grazing although this too depends on soil type. Exclusion of livestock on rich soils, results in rapid, persistent domination by *B. diandrus* while plots that continue to be grazed maintain a more mixed species dominance. On more nutrient poor soils, *B. diandrus* does not become dominant in grazing exclosures. Typically the dominance of *B. diandrus* is inversely related to forb diversity. Our results suggest that grazing can reduce *B. diandrus* dominance but relaxation of grazing leads to a rapid return of this species to dominance in nutrient rich soils.

2009. 62nd Society for Range Management Annual Meeting. Paper No. 20-2.