

Patch-Burning: “Rotational Grazing Without Fences”

Using Fire and Grazing to Restore Diversity on Grasslands

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Ecological Diversity

Ecological diversity is a critical characteristic of native grasslands. Grassland flora and fauna flourish under a regime of fire and grazing that is spatially and temporally variable, similar to historical patterns of wildfire and grazing by native species. This variability prompts the existence of many vegetation structures and species, which in turn provides habitat for a diverse suite of fauna, including grassland birds.



Rotational Grazing and Continuous Grazing Reduce Diversity

Rotational grazing reduces diversity across landscapes by forcing grazing distribution to be equally dispersed via costly fencing and frequent pasture changes within a year. The objectives of rotational grazing aim to specifically prevent either dense vegetation structure via the accumulation of biomass or short vegetation structure via intensive grazing pressure. Thus in rotationally grazed systems vegetation patches that have short structure, dense structure, or vegetation unique to patches returning to grass dominance following fire and grazing are all absent.

Continuous grazing does create some diversity, but it is static among years (i.e. the same places are grazed over and over). Some patches within a continuously grazed landscape are maintained in a short structure by repeated grazing while others accumulate biomass in the absence of grazing and maintain a dense structure. This creates a more diverse structure than rotational grazing within years, but similar grazing patterns year after year may be detrimental to other resource characteristics.

Patch Burning and Grazing Can Promote Diversity



The objective of patch burning is to create a shifting mosaic of fire and grazing across a landscape that varies annually, in effect causing livestock to rotationally graze among years rather than within years, but without costly fencing. Researchers at Oklahoma State University burn portions of unfenced landscapes each year. Livestock focus grazing on recently burned patches until new burned patches become available in the future. When grazing shifts to freshly burned patches, patches previously burned have abundant forbs and they begin to return to grass

dominance. When patches previously burned have returned to grass dominance they are burned again, restarting the cycle. Landscapes with distinct patches (recently burned, forb-abundant and grass-dominant) resemble the mosaic characteristic of historical grasslands and provide a diverse choice of habitats for wildlife that cannot be created by continuous grazing or rotational grazing within years. The appropriate frequency of fire in a patch burn landscape is dependent on climate (e.g. a longer interval in shortgrass prairie than tallgrass prairie).