



## **Does Repeated Intensive Defoliation Influence Cool- and Warm-Season Plant Cover in Shortgrass Steppe and Northern Mixed-Grass Prairie?**

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Vegetation composition shifts to greater dominance by perennial warm-season grasses occur with heavy stocking rates in both shortgrass steppe and northern mixed-grass prairie. Less clear, however, is the vegetation community response to repeated intensive defoliation that occurs with exurban development (i.e., ranchettes). We simulated effects of this land use in shortgrass steppe and northern mixed-grass prairie by imposing monthly (May-September) defoliations to 3 cm in 10, 2X2 m plots of intact native plant communities from 2005-2008. Canopy cover of cool- and warm-season plants was estimated twice (May and July) yearly, coinciding with peak growth periods of the cool- (May) and warm-season (July) plants. Cool-season grass cover was 40% greater in non-defoliated compared to intensively defoliated plots of the northern mixed-grass prairie following three years of treatments, whereas warm-season grass cover was nearly 20% higher in the defoliated plots. Results in this semiarid ecosystem concur with long-term grazing experiments where composition of cool-season plants decreases with increasing grazing pressure. In contrast, neither warm- or cool-season grass cover significantly changed over time with repeated intensive defoliations at the shortgrass steppe site. These results provide additional evidence that the shortgrass steppe is a highly grazing-resistant ecosystem, and that even repeated intensive defoliation is not a trigger to induce a feedback switch that alters ecosystem feedbacks which could possibly lead to vegetation state change.

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