



Patchiness of Mixed-Grass Prairie at Different Grazing Intensities

Jack E. Norland¹, Ryan F. Limb², Jay M. Volk³ and Don R. Kirby¹; (1) North Dakota State University, (2) Oklahoma State University, (3) BNI Coal; Contact Author Email: Jack.Norland@ndsu.edu

Grazing intensity has been identified as a major factor influencing rangeland vegetation composition. Differing grazing intensities can produce patchiness in vegetation, but quantifying that patchiness has been problematic. A new method called the dissimilogram is similar to geostatistical analyses in that it can identify spatial patterns in the vegetation by incorporating the multivariate nature of vegetation into the spatial analysis. Dissimilograms determine the inherent small scale dissimilarity of vegetation along with the average patch size and the highest mean dissimilarity between patches. Dissimilograms were calculated for an existing grazing intensity experiment on mixed-grass prairie in south central North Dakota with these season-long grazing intensity treatment levels: no grazing, moderate grazing (2.7 AUM/ ha⁻¹) and extreme grazing (6.9 AUM/ha⁻¹). The small scale dissimilarity for moderate grazing was significantly higher ($p>0.05$) compared to no grazing and extreme grazing. The dissimilogram for moderate grazing increased to a sill at the 14 m lag indicating a 14 m average patch size while the dissimilograms for both no grazing and extreme grazing constantly increased to the highest lag (36 m). Only at the highest lags did the no grazing and extreme grazing have dissimilarities similar to moderate grazing. Moderate grazing appears to promote small scale vegetative diversity and a patchy heterogeneous vegetation with an average patch size of 14 m while no grazing and extreme grazing intensities were similar with lower small scale diversity and a more homogeneous vegetation composition.

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