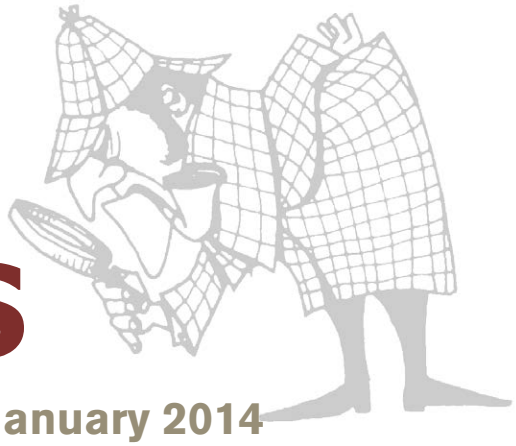
Highlights, *Rangeland Ecology & Management*, January 2014

Author(s):
Source: Rangelands, 36(1):34-36. 2014.
Published By: Society for Range Management
DOI: http://dx.doi.org/10.2111/1551-501X-36.1.34
URL: http://www.bioone.org/doi/full/10.2111/1551-501X-36.1.34



HIGHLIGHTS

Rangeland Ecology & Management, January 2014

Detecting the Influence of Best Management Practices on Vegetation Near Ephemeral Streams With Landsat Data

Matthew Rigge, Alexander Smart, Bruce Wylie, and Kendall Vande Kamp

Various best management practices have been implemented on rangelands with the goal of reducing livestock impacts to riparian areas, but their effectiveness often goes unmeasured. We evaluated the effects of installing off-stream water and cross fencing on commercial-scale pastures in the northern mixed-grass prairie. A series of 30-m Landsat images and the Normalized Difference Vegetation Index were used to track the spatial and temporal changes in riparian vegetation cover. The patterns of in-channel vegetation cover among pastures suggested that off-stream water and cross fencing likely altered grazing distribution by decreasing the preferential use of riparian and in-channel areas.

A Comparison of Satellite-Derived Vegetation Indices for Approximating Gross Primary Productivity of Grasslands

Yu Zhou, Li Zhang, Jingfeng Xiao, Shiping Chen, Tomomichi Kato, and Guangsheng Zhou

Satellite-derived vegetation indices have been widely used to approximate gross primary productivity (GPP) for grasslands, but their performance has not been rigorously evaluated. We compared the performance of nine vegetation indices for approximating grassland GPP in northern China using satellite observations from MODIS and GPP data from eddy covariance flux towers. Our results demonstrated that overall Enhanced Vegetation Index is the best predictor of GPP, whereas Soil-adjusted Vegetation Index exhibits the best correlation with GPP in spring when canopy is sparse. Our study provides useful insights on the selection of vegetation indices for the approximation and modeling of grassland GPP.

Livestock Management Strategy Affects Net Ecosystem Carbon Balance of Subhumid Pasture

Lawrence G. Oates and Randall D. Jackson

Climate change mitigation services from ecosystem carbon accumulation might be warranted for subhumid pastures. However, when all transfers of carbon are not considered, misconceptions can occur regarding how management strategy affects net ecosystem carbon balance (NECB). We estimated NECB under four livestock management practices typical of the north central United States. Management strategy did influence NECB by differentially affecting the ratio of net primary production to soil respiration. On short temporal and small spatial scales, net primary production and soil respiration were the primary regulators of NECB. However, to accurately determine NECB, it is necessary to account for all fluxes and cross pasture boundary transfers of carbon.

Spatial and Temporal Variability in Aboveground Net Primary Production of Uruguayan Grasslands

Anaclara Guido, Ramón Díaz Varela, Pablo Baldassini, and José Paruelo

Accounting for spatial and temporal variability of grassland aboveground net primary production (ANPP) is a prerequisite for sustainable management of grazing systems. We analyzed the spatial and temporal variability of ANPP in Uruguayan grasslands during 2000–2010 using remote sensing. ANPP varied spatially among geomorphological units, increasing from the north and midwest of Uruguay to the east and southeast. Although ANPP peaked in spring across all geomorphological units, there were distinct differences in temporal trends throughout 2000–2010. Remote sensing techniques can provide critical baseline data to calculate the risk of forage shortage and then explore management actions.