By Jeff Mosley

Browsing the Literature

This section reviews new publications available about the art and science of rangeland management. Personal copies of these publications can be obtained by contacting the respective publishers or senior authors (addresses shown in parentheses). Suggestions are welcomed and encouraged for items to include in future issues of *Browsing the Literature*. Contact Jeff Mosley, jmosley@montana.edu.

Grazing Management

Commentary: a critical assessment of the policy endorsement for holistic management. D. D. Briske, A. J. Ash, J. D. Derner, and L. Huntsinger. 2014. *Agricultural Systems* 125:50–53. (Dept of Ecosystem Science and Management, Texas A&M Univ, College Station, TX 77843, USA). "Currently the preponderance of evidence does not justify extensive promotion and adoption of [intensive rotational grazing] strategies, especially in arid and semiarid systems."

Controls over the strength and timing of fire–grazer interactions in a semi-arid rangeland. D. J. Augustine and J. D. Derner. 2014. *Journal of Applied Ecology* 51:242–250. (USDA Agricultural Research Service, 1701 Center Ave, Fort Collins, CO 80526, USA). In eastern Colorado shortgrass prairie, cattle preferred to graze within recently burned patches when vegetation growth was rapid, but not at other times. Topography was the primary factor influencing cattle distribution when vegetation growth was not rapid.

Hydrology/Riparian

A study of cattle producer preferences for best management practices in an East Tennessee watershed. D. M. Lambert, C. D. Clark, N. Busko, F. R. Walker, A. Layton, and S. Hawkins. 2014. *Journal of Soil and Water Conservation* 69:41–53. (Dept of Agricultural and Resource Economics, Univ of Tennessee, Knoxville, TN 37996, USA). Reinforced stream crossings were difficult and costly to maintain due to frequent high-flow events. Cattle producers were more willing to implement rotational grazing than reinforced stream crossings.

Effectiveness of natural riparian buffers to reduce subsurface nutrient losses to incised streams. K. E. Schilling and P. Jacobson. 2014. *Catena* 114:140–148. (Iowa Geological and Water Survey, 109 Trowbridge Hall, Iowa City, IA 52242, USA). Channel incision in a southern Iowa stream lowered the water table but did not increase nitrogen leaching to groundwater.

Measurements

An object-based image analysis of pinyon and juniper woodlands treated to reduce fuels. A. Hulet, B. A. Roundy, S. L. Petersen, R. R. Jensen, and S. C. Bunting. 2014. *Environmen-*

tal Management 53:660–671. (USDA Agricultural Research Service, 67826-A Hwy 205, Burns, OR 97720, USA). Color-infrared imagery provided useful estimates of ground cover in pinyon–juniper woodland sites treated with either prescribed fire, tree cutting, or mastication. Accuracy ranged from 82% to 85%.

Measuring legume content in pastures using digital photographs. E. B. Rayburn. 2014. *Forage and Grazinglands* doi:10.2134/FG-2011-0143-MG. 6 p. (West Virginia Univ Extension, PO Box 6108, Morgantown, WV 26506, USA). A grid in Microsoft PowerPoint was used to conduct point counts within digital photographs of pastures with varying botanical composition. In cool-season grass–clover pastures, reasonable estimates of pasture composition (grasses vs. legumes vs. other forbs) were developed from 12 photos per pasture and 100 points per photo.

Visual reference guide for estimating legume content in pastures. E. B. Rayburn and J. T. Green. 2014. *Forage and Grazinglands* doi:10.2134/FG-2011-0176-DG. 6 p. (West Virginia Univ Extension, PO Box 6108, Morgantown, WV 26506, USA). This compilation of 14 photos can be used to improve visual estimates of pasture composition by plant functional group (i.e., grasses, desirable legumes, and weeds).

Plant Ecology

Implications of precipitation, warming, and clipping for grazing resources in Canadian prairies. S. R. White, J. F. Cahill, Jr., and E. W. Bork. 2014. *Agronomy Journal* 106:33–42. (Dept of Biological Sciences, Univ of Alberta, Edmonton, AB T6G 2E9, Canada). Increased average air temperatures similar to those predicted by global warming reduced grass and forb production and decreased forage protein content.

Nitrogen translocation between clonal mother and daughter trees at a grassland–forest boundary. B. D. Pinno and S. D. Wilson. 2014. *Plant Ecology* 215:347–354. (S. Wilson, Dept of Biology, Univ of Regina, Regina, SK S4S 0A2, Canada). Nitrogen is translocated both from mothers to daughters and from daughters to mothers within a clone of quaking aspen, but nitrogen flows toward larger ramets when nitrogen availability is low.

Resilience to stress and disturbance, and resistance to *Bromus tectorum* L. invasion in cold desert shrublands of western North America. J. C. Chambers, B. A. Bradley, C. S. Brown, C. D'Antonio, M .J. Germino, J. B. Grace, S. P. Hardegree, R. F. Miller, and D. A. Pyke. 2014. *Ecosystems* 17:360–375. (US Forest Service, Rocky Mountain Research Station, 920 Valley Rd, Reno, NV 89512, USA). Authors advocate using state-and-transition models to guide management at ecological site scales and to use concepts of resilience and resistance to guide management at landscape scales.

Risk of white pine blister rust to limber pine in Colorado and Wyoming, USA. H. J. J. Kearns, W. R. Jacobi, R. M Reich, R. L. Flynn, K. S. Burns, and B. W. Geils. 2014. *Forest Pathology* 44:21–38. (W. Jacobi, Dept of Bioagricultural Sciences and Pest Management, Colorado State Univ, Fort Collins, CO 80523, USA). The introduced pathogen that causes white pine blister rust continues to spread to limber pine in the Southern Rocky Mountains. Where limber pine exists in Colorado and Wyoming, 41% and 61% of the area, respectively, is projected to be at risk.

Rehabilitation/Restoration

Cost/benefit analysis of managing invasive annual grasses in partially invaded sagebrush steppe ecosystems. R. Sheley, J. Sheley, and B. Smith. 2014. *Weed Science* 62:38–44. (USDA Agricultural Research Service, 67826-A Hwy 205, Burns, OR 97720, USA). Targeted livestock grazing is an economically viable tool for suppressing invasive annual grasses in big sagebrush steppe, but herbicide application is not.

No effect of seed source on multiple aspects of ecosystem functioning during ecological restoration: cultivars compared to local ecotypes of dominant grasses. S. G. Bauer, D. J. Gibson, D. J. Gustafson, A. M. Benscoter, L. K. Reed, R. E. Campbell, R. P. Klopf, J. E. Willand, and B. R. Wodika. 2014. *Evolutionary Applications* 7:323–335. (Dept of Plant Biology and Center for Ecology, Southern Illinois Univ, Carbondale, IL 62901, USA). In a comparison of a cultivar versus a genetically distinct local ecotype of Indiangrass, no differences existed in biomass production, soil carbon accumulation, or nitrogen mineralization.

Socioeconomics

Animal feed vs. human food: challenges and opportunities in sustaining animal agriculture toward 2050. J. L. Capper, L. Berger, M. M. Brashears, H. H. Jensen, J. Pettigrew, and J. M. Wilkinson. 2013. Council for Agricultural Science and Technology Issue Paper No. 53. 16 p. (Council for Agricultural Science and Technology, 4420 West Lincoln Way, Ames, IA 50014, USA). Presents science-based information to inform discussions about perceived competition between livestock and human food supplies.

Carbon sequestration and private rangelands: insights from Utah landowners and implications for policy development. S. L. Cook and Z. Ma. 2014. *Land Use Policy* 36:522–532. (Z. Ma, Dept of Forestry and Natural Resources, Purdue Univ, West Lafayette, IN 47909, USA). Rather than creating new programs specifically to increase carbon sequestration on private lands, survey results suggest that carbon sequestration should be incorporated into existing state and federal conservation programs.

The role of prescribed burn associations in the application of prescribed fires in rangeland ecosystems. D. Toledo, U. P. Krueter, M. G. Sorice, and C. A. Taylor, Jr. 2014. *Journal of Environmental Management* 132:323–328. (Dept of Ecosystem Science and Management, Texas A&M Univ, College Station, TX 77843, USA). Prescribed burning on private lands in Texas is limited more by landowners' perceived constraints due to lack of skill, knowledge, and access to equipment than landowners' perceptions of fire risk. Prescribed Burn Associations can help overcome these constraints.

Using social media to discover public values, interests, and perceptions about cattle grazing on park lands. S. J. Barry. 2014. *Environmental Management* 53:454–464. (Univ of California Cooperative Extension, 1553 Berger Dr, Building 1, San Jose, CA 95122, USA). In the San Francisco Bay area of California where recreation and cattle grazing coexist in parks, the photo-sharing website Flickr contained recreationists' opinions about livestock grazing that were seldom shared at public meetings or in surveys. Social media can be used to better gauge public opinions about natural resource management.

Soils

Cessation of burning dries soils long term in a tallgrass prairie. J. M. Craine and J. B. Nippert. 2014. *Ecosystems* 17:54–65. (Division of Biology, Kansas State Univ, Manhattan, KS 66506, USA). Short-term cessation of prescribed burning increased litter accumulation and increased soil moisture, but long-term cessation dried soils and favored woody plants that could access moisture at depths beyond 2.5 feet.

Soil carbon and nitrogen storage in alluvial wet meadows of the southern Sierra Nevada Mountains, USA. J. B. Norton, H. R. Olsen, L. J. Jungst, D. E. Legg, and W. R. Horwath. 2014. *Journal of Soil and Sediments* 14:34–43. (Dept of Ecosystem Science and Management, Univ of Wyoming, Laramie, WY 82071, USA). Light to moderate livestock grazing intensity did not affect soil organic carbon or soil nitrogen.

Soil criteria to protect terrestrial wildlife and open-range livestock from metal toxicity at mining sites. K. L. Ford and W. N. Beyer. 2014. *Environmental Monitoring and Assessment* 186:1899–1905. (W. Beyer, US Geological Survey, BARC East, Bldg 308, 10300 Baltimore Ave, Beltsville, MD 20705, USA). Presents toxicity thresholds in soil and mine waste for 6 metals commonly found at mining sites in western North America: arsenic, cadmium, copper, lead, mercury, and zinc.

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