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.

Animal Ecology

Cattle habitat selection and associated habitat characteristics under free-range grazing within heterogeneous montane rangelands of Alberta. J. Kaufmann, E. W. Bork, P. V. Blenis, and M. J. Alexander. 2013. *Applied Animal Behaviour Science* 146:1–10. (E. Bork, Dept of Agriculture, Food and Nutrition Science, Univ of Alberta, Edmonton, AB T6G 2P5, Canada.) At the landscape scale, cattle avoided steep slopes and sites far from water, and cattle use was very light within clear cuts (a.k.a., cut blocks.) At the feeding patch scale, cattle preferred areas where forage was abundant and nitrogen content was greater.

Competition and facilitation between a native and a domestic herbivore: trade-offs between forage quantity and quality. D. J. Augustine and T. L. Springer. 2013. *Ecological Applications* 23:850–863. (USDA-ARS, 1701 Center Ave, Fort Collins, CO 80526, USA.) Black-tailed prairie dogs and cattle compete for forage during dry periods when forage availability is reduced, but in some cases where precipitation is above average and forage abundance is not limiting, prairie dog herbivory can increase cattle weight gains by enhancing the nutritive quality of cattle forage.

Conservation implications of native and introduced ungulates in a changing climate. B. W. Allred, S. D. Fuhlendorf, T. J. Hovick, R. D. Elmore, D. M. Engle, and A. Joern. 2013. *Global Change Biology* 19:1875–1883. (Dept of Natural Resource Ecology and Management, Oklahoma State Univ, Stillwater, OK 74078, USA.) In tallgrass prairie, both cattle and bison sought refuge from heat by selecting areas closer to woody vegetation and water sources, but cattle did so at lower air temperatures than bison.

Diseases at the livestock-wildlife interface: status, challenges, and opportunities in the United States. R. S. Miller, M. L. Farnsworth, and J. L. Malmberg. 2013. *Preventive Veterinary Medicine* 110:119–132. (USDA-APHIS, 2150 Center Ave, Building B, Fort Collins, CO 80526, USA.) Authors synthesize the current status of livestock-wildlife diseases and identify potential strategies for addressing these issues. Bovine tuberculosis, paratuberculosis, brucellosis, avian influenza, rabies, and cattle fever tick have a wildlife reservoir that is a recognized impediment to eradication in domestic livestock.

***Mycobacterium bovis* (bovine tuberculosis) infection in North American wildlife: current status and opportunities for mitigation of risks of further infection in wildlife populations.** R. S. Miller and S. J. Sweeney. 2013. *Epidemiology and Infection* 141:1357–1370.

(USDA-APHIS, 2150 Center Ave, Building B, Fort Collins, CO 80526, USA.) The emergence of bovine tuberculosis in North American wildlife poses serious risk for livestock and human health and for the recreational hunting industry. Commingling of infected cattle with susceptible wildlife and supplemental feeding of wildlife contribute to disease transmission.

Woodlands as quality breeding habitat for black-capped vireos. T. L. Pope, M. L. Morrison, and R. N. Wilkins. 2013. *Journal of Wildlife Management* 77:994–1001. (Utah Division of Wildlife Resources, 1594 W. North Temple, Suite 2110, Salt Lake City, UT 84116, USA.) Reproduction by black-capped vireos, an endangered bird in central Texas, did not differ in shrublands versus oak-juniper woodlands.

Grazing Management

Nitrogen input effects on herbage accumulation and presence of pasture plant species. J. A. Guretzky, W. Schacht, L. Snell, J. Soper, S. Moore, A. Watson, and T. Klopfenstein. 2013. *Agronomy Journal* 105:915–921. (Dept of Agronomy and Horticulture, Univ of Nebraska, Lincoln, NE 68583, USA.) In smooth brome grass pastures of eastern Nebraska, supplementing cattle with dried distillers' grains supplied enough nitrogen through excretion to moderately suppress annual grasses.

Spring cattle grazing and mule deer nutrition in a blue-bunch wheatgrass community. S. J. Wagoner, L. A. Shipley, R. C. Cook, and L. Hardesty. 2013. *Journal of Wildlife Management* 77:897–907. (School of the Environment, Washington State Univ, Pullman, WA 99164, USA.) In southeastern Washington, moderate cattle grazing in spring did not affect the nutritional carrying capacity of mule deer in the spring or fall of the same year.

Hydrology/Riparian

Exotic plant colonization and occupancy within riparian areas of the Interior Columbia River and Upper Missouri River Basins, USA. R. Al-Chokhachy, A. M. Ray, B. B. Roper, and E. Archer. 2013. *Wetlands* 33:409–420. (US Geological Survey, 2327 University Way, Suite 2, Bozeman, MT 59715, USA.) Cheatgrass and spotted knapweed had low occupancy rates, whereas Canada thistle had moderate occupancy. Colonization rates were low for all three species.

Woody vegetation removal stimulates riparian and benthic denitrification in tallgrass prairie. A. J. Reisinger, J. M. Blair, C. W. Rice, and W. K. Dodds. 2013. *Ecosystems* 16:547–560. (Dept of Biological Sciences, Univ of Notre Dame, Notre Dame, IN 46556, USA.) Soil denitrification rates increased when encroaching woody plants were removed from tallgrass prairie riparian areas.

Measurements

Successional stage of biological soil crusts: an accurate indicator of ecohydrological condition. J. Belnap, B. P. Wilcox, M. W. Van Scoyoc, and S. L. Phillips. 2013. *Ecohydrology* 6:474–482. (US Geological Survey, 2290 S. West Resource Blvd, Moab, UT 84532, USA.) Authors present a quick, easy, and nondestructive index of rangeland hydrological condition based on the level of development of biological soil crusts.

Plant-Animal Interactions

Patterns and consequences of ungulate herbivory on aspen in western North America. S. T. Seager, C. Eisenberg, and S. N. St Clair. 2013. *Forest Ecology and Management* 299:81–90. (Dept of Forest Ecosystems and Society, Oregon State Univ, Corvallis, OR 97331, USA.) Recommends that ungulate grazing/browsing impacts to aspen stands be used to indicate sustainable herd densities.

Plant Ecology

Heterogeneity in recruitment and habitat patterns of valley oak (*Quercus lobata* Nee) at the site and landscape scale in the Santa Monica Mountains, California, USA. J. J. Hayes. 2013. *Plant Ecology* 214:929–940. (Dept of Geography/Geology, Univ of Nebraska, Omaha, NE 68182, USA.) Saplings are establishing on north-to-east hillsides and near riparian areas, but regeneration is not occurring in hilltop and swale sites.

Human influences on fire regimes and forest structure in the Chihuahuan Desert Borderlands. H. M. Poulos, J. V. Diaz, J. C. Paredes, A. E. Camp, and R. G. Gatewood. 2013. *Forest Ecology and Management* 298:1–11. (College of the Environment, Wesleyan Univ, Middletown, CT 06459, USA.) Sheep grazing in the early to mid-1900s disrupted frequent, low-severity fire regimes in western Texas and northern Mexico, resulting in widespread tree regeneration.

Physical disturbance shapes vascular plant diversity more profoundly than fire in the sagebrush steppe of southeastern Idaho, USA. M. Lavin, T. J. Brummer, R. Quire, B. D. Maxwell, and L. J. Rew. 2013. *Ecology and Evolution* 3:1626–1641. (Dept of Plant Sciences and Plant Pathology, Montana State Univ, Bozeman, MT 59717, USA.) Wildfires did not strongly influence plant diversity. Also, postfire recovery to a high diversity of native forbs, grasses, and shrubs occurred without reseeding.

Resilience in quaking aspen: recent advances and future needs. P. C. Rogers, C. Eisenberg, and S. B. St Clair. 2013. *Forest Ecology and Management* 299:1–5. (Dept of Wildland Resources, Utah State Univ, Logan, UT 84322, USA.) Reviews the state of aspen science and summarizes the issues and needs identified at a 2012 symposium in Colorado.

Using long-term datasets to study exotic plant invasions on rangelands in the western United States. C. Morris, L. R. Morris, A. J. Leffler, C. D. H. Collins, A. D. Forman, M. A. Weltz, and S. G. Kitchen. 2013. *Journal of Arid Environments* 95:65–74. (USDA-ARS, 920 Valley Rd, Reno, NV 89512, USA.) The sigmoidal growth curve used to describe the introduction, expansion, and saturation of invasive plants was only marginally accurate for describing invasions by several exotic plant species in western US rangelands.

Rehabilitation/Restoration

Inconsistent outcomes of heterogeneity-based management underscore importance of matching evaluation to conservation objectives. D. A. McGranahan, D. M. Engle, S. D. Fuhlendorf, S. L. Winter, J. R. Miller, and D. M. Debiniski. 2013. *Environmental Science and Policy* 31:53–60. (Dept of Environmental Studies, Univ of the South, Sewanee, TN 37375, USA.) Measurements from five experimental rangelands in Oklahoma and Iowa revealed that habitat diversity did not always increase when landscapes were managed for heterogeneity via patch-burn grazing.

Multi-scale associations of grassland birds in response to cost-share management of Conservation Reserve Program fields in Illinois. D. C. Osborne and D. W. Sparling. 2013. *Journal of Wildlife Management* 77:920–930. (Univ of Arkansas Forest Resources Center, Box 3468, Monticello, AR 71656, USA.) In tall fescue-dominated fields in south-central Illinois, bird density and diversity were increased by spraying glyphosate in the fall. Fall disking was ineffective,

and following fall glyphosate spraying with drill-seeding legumes the next spring did not increase bird response compared with glyphosate treatment alone.

Refining thresholds in coupled fire-vegetation models to improve management of encroaching woody plants in grasslands. D. Twidwell, S. D. Fuhlendorf, C. A. Taylor, and W. E. Rogers. 2013. *Journal of Applied Ecology* 50:603–613. (Dept of Natural Resource Ecology and Management, Oklahoma State Univ, Stillwater, OK 74078, USA.) Surface fire intensity must exceed 160 kJ/m/second to kill Ashe juniper trees.

Soils

Impacts of Tamarix-mediated soil changes on restoration plant growth. E. A. Lehnhoff and F. D. Mennalled. 2013. *Applied Vegetation Science* 16:438–447. (Dept of Land Resources and Environmental Sciences, Montana State Univ, Bozeman, MT 59717, USA.) Growth of plants used to restore salt cedar-invaded riparian sites in Montana should not be hindered by salt cedar-induced changes to soils.

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