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

Aspects of northern bobwhite ecology on south Florida US pastureland. J. A. Martin, W. E. Palmer, and J. P. Carroll. 2013. *European Journal of Wildlife Research* 59:205–214. (Dept of Wildlife, Fisheries and Aquaculture, Mississippi State Univ, Mississippi State, MS 39762, USA). Florida pastureland landscapes managed with rotational cattle grazing can support bobwhite populations.

Associations of grassland bird communities with black-tailed prairie dogs in the North American Great Plains. D. J. Augustine and B. W. Baker. 2013. *Conservation Biology* 27:324–334. (USDA-ARS Rangeland Resources Research Unit, 1701 Center Ave, Fort Collins, CO 80526, USA). Prairie dog colonies are characterized by large amounts of bare soil and low plant height and plant density. These habitat features favor burrowing owls, mountain plovers, killdeer, horned larks, and McCown's longspurs. In contrast, lark buntings, vesper sparrows, and lark sparrows prefer off-colony habitat.

Ecological mechanisms underlying arthropod species diversity in grasslands. A. Joern and A. N. Laws. 2013. *Annual Review of Entomology* 58. doi: 10.1146/annurev-ento-120811-153540. 19 p. (Division of Biology, Kansas State Univ, Manhattan, KS 66506, USA). Summarizes arthropod responses to grazing, fire, climate, and other factors in grasslands.

Greater sage-grouse winter habitat use on the eastern edge of their range. C. C. Swanson, M. A. Rumble, T. W. Grovenburg, N. W. Kaczor, R. W. Klaver, K. M. Herman-Brunson, J. A. Jenks, and K. C. Jensen. 2013. *Journal of Wildlife Management* 77:486–494. (US Fish and Wildlife Service, One First St SW, Kulm, ND 58456, USA). In western North Dakota and South Dakota, sage-grouse during winter selected sites that averaged 15% sagebrush canopy cover and 12% grass cover.

Habitat selection increases the isolating effect of habitat fragmentation on the gopher tortoise. E. D. McCoy, K. A. Basiotis, K. M. Connor, and H. R. Mushinsky. 2013. *Behavioral Ecology and Sociobiology* 67:815–821. (Dept of Integrative Biology, Univ of South Florida, Tampa, FL 33620, USA). In central Florida, viable gopher tortoise populations require habitat where tree canopy cover and exotic weeds are actively suppressed.

Grazing Management

Relationships between grazing and waterfowl production in the Canadian prairies. P. M. Bloom, D. W. Howerter, R. B. Emery, and L. M. Armstrong. 2013. *Journal of Wildlife Management* 77:534–544. (Ducks Unlimited Canada, Institute of Wetland and Waterfowl Research, Box 1160, Stonewall, MB R0C 2Z0, Canada). In waterfowl nesting habitat, authors recommend moderate livestock stocking rates (0.8 to 1.0 animal unit months/acre), postgrazing residual stubble heights greater than 11 inches, and delaying livestock grazing until after the breeding season.

Using livestock to manage plant composition: a meta-analysis of grazing in California Mediterranean grasslands. K. A. Stahlheber and C. M. D'Antonio. 2013. *Biological Conservation* 157:300–308. (Dept of Ecology, Evolution, and Marine Biology, Univ of California, Santa Barbara, Santa Barbara, CA 93106, USA). “These results lend support to the use of grazing to enhance native forb richness and native grass cover in some settings although this must be weighed against increases in the cover of exotic forbs.”

Hydrology/Riparian

Effects of drought on birds and riparian vegetation in the Colorado River Delta, Mexico. O. Hinojosa-Huerta, P. L. Nagler, Y. K. Carrillo-Guererro, and E. P. Glenn. 2013. *Ecological Engineering* 51:275–281. (E. Glenn, Environmental Research Lab, Univ of Arizona, 1601 East Airport Dr, Tucson, AZ 85706, USA). A 7-year drought reduced cottonwoods and willows, but total vegetative cover was unchanged because saltcedar increased. Bird density and diversity also were unchanged, but riparian-obligate birds decreased in abundance while generalist bird species increased.

Understanding factors that correlate or contribute to exotic Russian-olive (*Elaeagnus angustifolia*) invasion at a wildland–urban interface ecosystem. B. D. Madurapperuma, P. G. Oduor, M. J. Anar, and L. A. Kotchman. 2013. *Invasive Plant Science and Management* 6:130–139. (Environmental and Conservation Sciences Program, PO Box 6050, North Dakota State Univ, Fargo, ND 58310, USA). Along the Missouri River in central North Dakota, the Russian olive infestation expanded 14% in 5 years.

Plant–Animal Interactions

Seed harvesting by a generalist consumer is context-dependent: interactive effects across multiple spatial scales. S. M. Ostojia, E. W. Schupp, and R. Klinger. 2013. *Oikos* 122:563–574. (US Geological Survey, Yosemite Field Station, 40298 Junction Dr, Oakhurst, CA 93644, USA). Cheatgrass seeds were the least preferred seeds by western harvester ants in west-central Utah sagebrush steppe.

The role of seed predation in the maintenance of the Cross Timbers ecotone of Oklahoma, USA. R. W. Myer. 2013. *Journal of Plant Interactions* 8:134–139. (Dept of Biology, Oklahoma State Univ, Stillwater, OK 73017, USA). In the ecotone between tallgrass prairie and eastern deciduous forest, seed predators did not remove seeds of the invasive tree, eastern redcedar, but seed predators did remove seeds of eight different native tree species.

Plant Ecology

Competitive outcomes between two exotic invaders are modified by direct and indirect effects of a native conifer. K. L. Merten, E. T. Aschehoug, and R. M. Callaway. 2013. *Oikos* 122:632–640. (The Nature Conservancy, 33 North Central Ave, Suite 405, Medford, OR 97501, USA). Ponderosa pine litter and litter leachate inhibit both cheatgrass and spotted knapweed, but less so for cheatgrass, thus facilitating cheatgrass over spotted knapweed.

Repeated burning of eastern tallgrass prairie increases richness and diversity, stabilizing late successional vegetation. M. L. Bowles and M. D. Jones. 2013. *Ecological Applications* 23:464–478. (Morton Arboretum, 4100 Illinois Route 53, Lisle, IL 60532, USA). In northern Illinois, summer forbs increased with frequent fires, while warm-season grasses, spring forbs, and nitrogen-fixing species decreased with fire exclusion. Frequent fires that remove woody vegetation and prevent biomass accumulation are necessary to maintain plant species diversity in ungrazed eastern tallgrass prairie.

‘Snowstorm’, a new forage kochia cultivar with improved stature, productivity, and nutritional content for enhanced fall and winter grazing. B. L. Waldron, S. R. Larson, M. D. Peel, K. B. Jensen, T. C. Mukimov, A. Rabbimov, D. R. Zobel, R. C. Wang, R. C. Smith, R. D. Harrison, and B. W. Davenport. 2013. *Journal of Plant Registrations* 7:140–150. (USDA-ARS Forage and Range Research Lab, 695 North 1100 East, Logan, UT 84322, USA). This new cultivar of forage kochia is taller, more nutritious, and more productive than ‘Immigrant’.

Vegetation–microclimate feedbacks in woodland–grassland ecotones. P. D’Odorico, Y. F. He, S. Collins, S. F. J. De Wekker, V. Engel, and J. D. Fuentes. 2013. *Global Ecology and Biogeography* 22:364–379. (Dept of Environmental Sciences, Univ of Virginia, Charlottesville, VA 22904, USA). The presence of trees or shrubs elevates nighttime temperatures, thereby favoring the establishment, growth, and survival of woody plants.

Rehabilitation/Restoration

Change in leafy spurge (*Euphorbia esula*) density and soil seedbank composition 10 years following release of

Aphthona spp. biological control agents. C. M. Setter and R. G. Lym. 2013. *Invasive Plant Science and Management* 6:147–160. (Dept of Plant Sciences, North Dakota State Univ, Fargo, ND 58105, USA). In 10 years flea beetles reduced leafy spurge stem density 88% at one site and 98% at another site in western North Dakota.

Ecosystem services from keystone species: diversionary seeding and seed-caching desert rodents can enhance Indian ricegrass seedling establishment. W. S. Longland and S. M. Ostoja. 2013. *Restoration Ecology* 21:285–291. (USDA-ARS, 920 Valley Rd, Reno, NV 89512, USA). Seedling establishment of the desirable Indian ricegrass was increased by providing palatable seeds of white millet to reduce consumption of Indian ricegrass seeds by desert rodents in western Nevada.

Effect of aminopyralid on desirable forb species. J. R. Mikelson and R. G. Lym. 2013. *Invasive Plant Science and Management* 6:30–35. (Dept of Plant Sciences, North Dakota State Univ, Fargo, ND 58105, USA). “Of the forbs evaluated, azure aster, purple coneflower, and closed bottle gentian were the most tolerant to aminopyralid while prairie coneflower, great blue lobelia, harebell, and white prairie clover were the most susceptible....”

Effects of growth regulator herbicide on downy brome (*Bromus tectorum*) seed production. M. J. Rinella, R. A. Masters, and S. E. Bellows. 2013. *Invasive Plant Science and Management* 6:60–64. (USDA-ARS, 243 Fort Keogh Rd, Miles City, MT 59301, USA). In a greenhouse study, picloram did not greatly reduce cheatgrass seed production, but aminopyralid did.

Evaluating alternative weed management strategies for three Montana landscapes. L. Frid, D. Hanna, N. Korb, B. Bauer, K. Bryan, B. Martin, and B. Holzer. 2013. *Invasive Plant Science and Management* 6:48–59. (Apex Resource Management Solutions, 1110 Lenora Rd, Bowen Island, BC V0N 1G1, Canada). Inconsistent treatment and short-term

delays in treating spotted knapweed or leafy spurge greatly reduce the benefits of treating these weeds; controlling small, new infestations maximizes benefits and limits financial and ecological costs.

Socioeconomics

Recent land use change in the Western Corn Belt threatens grasslands and wetlands. C. K. Wright and M. C. Wimberly. 2013. *Proceedings of the National Academy of Sciences of the United States of America* 110:4134–4139. (Geographic Information Science Center of Excellence, South Dakota State Univ, Brookings, SD 57007, USA). From 2006 to 2011, 1.3 million acres of grassland were converted to corn/soybean cropland in the western US Corn Belt (North Dakota, South Dakota, Nebraska, Minnesota, Iowa). Corn and soybean production is expanding onto marginal lands that are more vulnerable to erosion and drought.

Soils

Short-term effects of grazing intensity and nitrogen fertilization on soil organic carbon pools under perennial grass pastures in the southeastern USA. M. L. Silveira, K. S. Liu, L. E. Sollenberger, R. F. Follett, and J. M. B. Vendramini. 2013. *Soil Biology and Biochemistry* 58:42–49. (Range Cattle Research and Education Center, Univ of Florida, Ona, FL 33865, USA). On rotationally grazed Bermuda grass pastures, soil organic carbon was unaffected when residual stubble height was at least 6 inches.

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