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

A review of hypothesized determinants associated with bighorn sheep (*Ovis canadensis*) die-offs. D. S. Miller, E. Hoberg, G. Weiser, K. Aune, M. Atkinson, and C. Kimberling. 2012. *Veterinary Medicine International* 2012:796527. doi:10.1155/2012/796527. 19 p. (PO Box 2786, Loveland, CO 80539, USA). Reviewed potential causes of bighorn sheep die-offs and concluded that uncertainty remains as to whether disease outbreaks and die-offs are due to natural or introduced agents.

Cattle grazing and conservation of a meadow-dependent amphibian species in the Sierra Nevada. L. M. Roche, A. M. Latimer, D. J. Eastburn, and K. W. Tate. 2012. *PloS One* 7(4):e35734. doi:10.1371/journal.pone.0035734. 11 p. (Dept of Plant Sciences, University of California, Davis, CA 95616, USA). Cattle grazing is compatible with the Yosemite toad.

Disturbance regimes and mountain plover habitat in shortgrass steppe: large herbivore grazing does not substitute for prairie dog grazing or fire. D. J. Augustine and J. D. Derner. 2012. *Journal of Wildlife Management* 76:721–728. (USDA-ARS, 1701 Center Ave, Fort Collins, CO 80526, USA). Breeding mountain plovers favored sites with bare ground created by prescribed fire during the previous dormant season or created by black-tailed prairie dog colonies. Intensive cattle grazing at twice the recommended stocking rate during spring or summer for 6 years did not produce enough bare ground desired by mountain plovers.

Effect of grazing and invasive grasses on desert vertebrates in California. D. J. Germano, G. B. Rathbun, and L. R. Saslaw. 2012. *Journal of Wildlife Management* 76:670–682. (Dept of Biology, California State College, Bakersfield, CA 93311, USA). Cattle grazing did not reduce abundance of any species studied, including blunt-nosed leopard lizards, giant kangaroo rats, short-nosed kangaroo rats, San Joaquin antelope squirrels, western whiptail lizards, side-blotched lizards, San Joaquin pocket mice, and Hermann's kangaroo rats.

Habitat selection by greater sage-grouse during winter in southeastern Oregon. C. A. Hagen, M. J. Willis, E. M. Glenn, and R. G. Anthony. 2011. *Western North American Naturalist* 71:529–538. (Oregon Dept of Fish and Wildlife, 61374 Parrell Rd, Bend, OR 97702, USA). Sage-grouse wintering at low elevations preferred low sagebrush (*Artemisia arbuscula*) vegetation types and avoided Wyoming big sagebrush vegetation types.

Overlap in diet and habitat between the mule deer (*Odocoileus hemionus*) and feral ass (*Equus asinus*) in the Sonoran Desert. J. P. Marshal, V. C. Bleich, P. R. Krausman, M. L. Reed, and A. Neibergs. 2012. *Southwestern Naturalist* 57:16–25. (School of Animal, Plant, and Environmental Science, University of Witwatersrand, Private Bag 3, ZA-2050 Wits, South Africa). Mule deer and feral asses had high dietary overlap, with both species consuming diets heavily dominated by browse.

Grazing Management

Use of *n*-alkanes to estimate seasonal diet composition and intake of sheep and goats grazing in California chaparral. N. Narvaez, A. Brosh, and W. Pittroff. 2012. *Small Ruminant Research* 104:129–138. (W. Pittroff, Inter Pares Consultants, Wingertchen 6, D-55743 Idar Oberstein, Germany). When prescriptively grazed to reduce fuel loads in California chaparral, sheep and goats cannot maintain body condition without supplementation.

Vegetation responses to supplemental winter feeding of elk in western Wyoming. M. J. Rinella, R. Dean, M. Vavra, and C. G. Parks. 2012. *Western North American Naturalist* 72:78–83. (USDA-ARS, 243 Fort Keogh Rd, Miles City, MT 59301, USA). Shrubs disappeared, native forbs declined, and smooth brome increased on an elk feed ground after 25 years of winter feeding, but those effects did not extend far beyond the small area where the elk were fed.

Hydrology/Riparian

Dynamics of plains cottonwood (*Populus deltoides*) forests and historical landscape change along unchannelized segments of the Missouri River, USA. M. D. Dixon, W. C. Johnson, M. L. Scott, D. E. Bowen, and L. A. Rabbe. 2012. *Environmental Management* 49:990–1008. (Dept of Biology, University of South Dakota, Vermillion, SD 57069, USA). In the upper two-thirds of the Missouri River, 67% of cottonwood stands were > 50 years old, and only 10% were < 25 years old. Authors conclude that management of dams needs modification to increase cottonwood recruitment.

Hydrological impacts of mesquite encroachment in the Upper San Pedro Watershed. W. Nie, Y. Yuan, W. Kepner, C. Erickson, and M. Jackson. 2012. *Journal of Arid Environments* 82:147–155. (Y. Yuan, US Environmental Protection Agency, 944 E Harmon Ave, Las Vegas, NV 89119, USA). Mesquite encroachment in a desert grassland increased evapotranspiration, reducing both annual water yield and percolation by 10%.

Reduced impacts or a longer lag phase? Tamarix in the northwestern USA. E. A. Lehnhoff, L. J. Rew, C. A. Zabiniski, and F. D. Menalled. 2012. *Wetlands* 32:497–508. (Dept

of Land Resources and Environmental Sciences, Montana State University, Bozeman, MT 59717, USA). To date, saltcedar infestations have had minimal effects on soils and plant communities in Montana riparian areas.

Riparian shrub metal concentrations and growth in amended fluvial mine tailings. P. J. Meiman, N. R. Davis, J. E. Brummer, and J. A. Ippolito. 2012. *Water, Air, & Soil Pollution* 223:1815–1828. (Dept of Forest and Rangeland Stewardship, Colorado State University, Fort Collins, CO 80523, USA). Red-osier dogwood, thinleaf alder, and shrubby cinquefoil are shrubs suitable for mine-tailing revegetation.

Willow cover as a stream-recovery indicator under a conservation grazing plan. T. D. Booth, S. E. Cox, G. Simmonds, and E. D. Sant. 2012. *Ecological Indicators* 18:512–519. (USDA-ARS, 8408 Hildreth Rd, Cheyenne, WY 82009, USA). Reduced hot season cattle grazing caused willow cover to quickly increase along streams inhabited by the threatened Lahonton cutthroat trout in Nevada. Stream recovery was documented with aerial survey measurements of willow canopy cover before and after the changes in grazing management.

Management Planning

Power and conflict in adaptive management: analyzing the discourse of riparian management on public lands. J. S. Arnold, M. Koro-Ljungberg, and W. L. Bartels. 2012. *Ecology and Society* 17(1):19. doi:10.5751/ES-04636-170119. 12 p. (School of Natural Resources and Environment, University of Florida, Gainesville, FL 32611, USA). A case study from the southwestern United States illustrates how small-group facilitators inappropriately influenced the outcomes of a collaborative process by assuming the additional role of technical experts during the discussions.

Plant Ecology

Response of dominant grass and shrub species to water manipulation: an ecophysiological basis for shrub invasion in a Chihuahuan Desert grassland. H. L. Throop, L. G. Reichmann, O. E. Sala, and S. R. Archer. 2012. *Oecologia* 169:373–383. (Dept of Biology, New Mexico State University, Las Cruces, NM 88003, USA). Displacement of black grama by mesquite appears partly attributable to the mesquite leaves remaining physiologically active for more of the growing season than black grama leaves do.

Woody plant encroachment decreases diversity across North American grasslands and savannas. Z. Ratajczak, J. B. Nippert, and S. L. Collins. 2012. *Ecology* 493:697–703. (Division of Biology, Kansas State University, Manhattan, KS 66502, USA). Analyzed 29 studies from 13 different grassland/savanna communities in North America and de-

terminated that woody plant encroachment decreased plant species richness by an average of 45%.

Rehabilitation/Restoration

Breeding biologies, pollinators, and seed beetles of two prairie-clovers, *Dalea ornata* and *Dalea searlsiae* (Fabaceae: Amorphaeae), from the Intermountain West, USA. J. H. Cane, M. Weber, and S. Miller. 2012. *Western North American Naturalist* 72:16–20. (USDA-ARS, Pollinating Insect Research Unit, Utah State University, Logan, UT 84322, USA). “Productive farming of the seed of these prairie-clovers for rangeland restoration in the western United States will require supplementation of bees for pollination and exclusion of seed beetles.”

Experimental tree removal in tallgrass prairie: variable responses of flora and fauna along a woody cover gradient. A. L. Alford, E. C. Hellgren, R. Limb, and D. M. Engle. 2012. *Ecological Applications* 22:947–958. (Dept of Biology, Linfield College, 900 SE Baker St, McMinnville, OR 97128, USA). Grassland vegetation, invertebrates, and small mammals recovered appreciably within 2 years after removal of eastern redcedar trees that had invaded tallgrass prairie.

Grassland restoration with and without fire: evidence from a tree-removal experiment. C. B. Halpern, R. D. Haugo, J. A. Antos, S. S. Kaas, and A. L. Kilanowski. 2012. *Ecological Applications* 22:425–441. (School of Forest Resources, University of Washington, Seattle, WA 98195, USA). In western Oregon, where dry mountain meadows had been converted to coniferous forest, tree removal without fire or seeding appears sufficient to restore meadow plant communities.

Impediments to prescribed fire across agency, landscape and manager: an example from northern California. L. N. Quinn-Davidson and J. M. Varner. 2012. *International Journal of Wildland Fire* 21:210–218. (Environment and Community Graduate Program, Humboldt State University, 1 Harpst St, Arcata, CA 95521, USA). “Prescribed burning annually covered only 38% of the area needed to fulfill land management objectives, and 66% of managers indicated dissatisfaction with levels of prescribed fire activity.”

Population-level compensation impedes biological control of an invasive forb and indirect release of a native grass. Y. K. Ortega, D. E. Pearson, L. P. Waller, N. J. Sturdevant, and J. L. Maron. 2012. *Ecology* 93:783–792. (US Forest Service, 800 E Beckwith Ave, Missoula, MT 59801, USA). *Cyphocleonus achates*, a biological control agent for spotted knapweed, did not reduce spotted knapweed’s ability to depress bluebunch wheatgrass reproduction and recruitment.

Seedling recruitment in the long-lived perennial, *Echinacea angustifolia*: a 10-year experiment. S. Wagenius, A. B. Dykstra, C. E. Ridley, and R. G. Shaw. 2012. *Restoration Ecology* 20:352–359. (Division of Plant Science and Conservation, Chicago Botanical Garden, Glencoe, IL 60022, USA). “Strategies to reintroduce this species [into tallgrass prairie] should include burning in the spring before sowing, sowing large quantities of seed, avoiding burning in the spring following sowing, and burning at least once within the first 6 years.”

The influence of fire on Illinois hill prairie Auchenorrhyncha (Insecta: Hemiptera) diversity and integrity. A. M. Wallner, B. Molano-Flores, and C. H. Dietrich. 2012. *Journal of Insect Conservation* 16:433–445. (USDA-APHIS, 151 W Bolyston Dr, Worcester, MA 01606, USA). Authors recommend a minimum of 3–5 years between prescribed burns to maintain tallgrass prairie vegetation structure and prairie arthropods.

Soils

Conversion of tallgrass prairie to woodland: consequences for carbon and nitrogen cycling. R. L. McCulley and R. B. Jackson. 2012. *American Midland Naturalist* 167:307–321. (Dept of Plant and Soil Science, University of Kentucky, Lexington, KY 40546, USA). In central Texas prairie that had been converted to woodland over the past 60–70 years, soil carbon was 20% less in the converted woodland than in adjacent grassland.

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