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

Lizard abundance in an exurban southwestern savanna, and the possible importance of roadrunner predation. B. W. Audsley, C. E. Bock, Z. F. Jones, J. H. Bock, and H. M. Smith. 2006. *American Midland Naturalist* 155:395–401. (C. Bock, Department of Ecology and Evolutionary Biology, University of Colorado, Boulder, CO 80309). In southeastern Arizona, roadrunners were more common in grazed areas within low-density exurban housing developments than in undeveloped sites. Some species of lizards were scarce in developed areas, especially where homeowners kept livestock, but overall lizard abundance was unaffected by livestock grazing or development.

Nesting ecology of lesser prairie-chickens in sand sagebrush prairie of southwestern Kansas. J. C. Pitman, C. A. Hagen, B. E. Jamison, R. J. Robel, T. M. Loughin, and R. D. Applegate. 2006. *Wilson Journal of Ornithology* 118:23–35. (Kansas Department of Wildlife and Parks, PO Box 1525, Emporia, KS 66801). The primary cause of nest failure was predation by coyotes and gopher snakes.

Thermal balance of cattle grazing winter range: model application. E. N. Keren and B. E. Olson. 2006. *Journal of Animal Science* 84:1238–1247. (B. Olson, Department of Animal and Range Sciences, Montana State University, Bozeman, MT 59717). Behaviors such as lying and orientation to the sun enabled beef cows to mitigate the effects of extreme winter weather. Failure to account for these behaviors will likely overestimate energy requirements of cattle acclimated to winter range.

Visibility and vigilance: behavior and population ecology of Uinta ground squirrels (*Spermophilus armatus*) in different habitats. M. J. Hannon, S. H. Jenkins, R. L. Crabtree, and A. K. Swanson. 2006. *Journal of Mammalogy* 87:287–295. (Yellowstone Ecological Research Center, 2048 Analysis Drive, Suite B, Bozeman, MT 59718). Shrub cover makes it more difficult for ground squirrels to detect predators, but shrub cover also makes it more difficult for predators to detect ground squirrels. Ground squirrels can adapt to more or less shrub cover as long as grasses are sufficiently abundant to provide fattening seeds for forage.

Grazing Management

Differences among beef sire breeds and relationships between terrain use and performance when daughters graze foothill rangelands as cows. H. C. VanWagoner, D. W. Bailey, D. D. Kress, D. C. Anderson, and K. C. Davis. 2006. *Applied Animal Behaviour Science* 97:105–121. (D. Bailey, Department of Animal and Range Sciences, New Mexico State University, Las Cruces, NM 88003). In northern Montana, cows sired by bulls from breeds devel-

oped in mountainous terrain appeared to use rugged topography more completely than cows sired by bulls from breeds developed in more gentle terrain. Also, cows from dams that used steeper slopes and grazed farther from water displayed similar behavior when compared with cows from dams that typically grazed gentle terrain near water.

Nutrient content and in situ disappearance in genotypes of buffelgrass (*Cenchrus ciliaris* L.). R. Morales-Rodriguez, R. G. Ramirez, G. J. Garcia-Dessommes, and H. Gonzalez-Rodriguez. 2006. *Journal of Applied Animal Research* 29:17–22. (Department of Alimentos, University Autonoma Nuevo Leon, Apartado Postal 142, Suc F, Cd University, San Nicolas de los Garza 66450, Mexico). Evaluated 78 genotypes of buffelgrass and identified 5 genotypes that provide superior nutritive quality for grazing cattle.

Plant-Animal Interactions

Effect of plant litter on seed predation in three prairie types. A. W. Reed, G. A. Kaufman, and D. W. Kaufman. 2006. *American Midland Naturalist* 155:278–285. (Museum of Natural History, University of Kansas, 1345 Jayhawk Blvd, Lawrence, KS 66045). Plant litter in prairie grasslands inhibits seed removal by rodents, but not by ants.

Plant Ecology

Defoliation effects on arbuscular mycorrhizae and plant growth of two native bunchgrasses and an invasive forb. S. Z. Walling and C. A. Zabinski. 2006. *Applied Soil Ecology* 32:111–117. (C. Zabinski, Department of Land Resources and Environmental Sciences, Montana State University, Bozeman, MT 59717). Spotted knapweed growth rate recovered faster after clipping than either bluebunch wheatgrass or Idaho fescue.

Nutrient availability does not explain invasion and dominance of a mixed grass prairie by the exotic forb *Centaurea diffusa* Lam. K. D. LeJeune, K. N. Suding, and T. R. Seastedt. 2006. *Applied Soil Ecology* 32:98–110. (Stratus Consulting, Inc, 1881 9th St, Suite 201, Boulder, CO 80302). Diffuse knapweed requires reduced competition to invade grasslands. Also, heterogeneity in plant cover, generally believed to enhance species coexistence and biological diversity, provides increased opportunity for diffuse knapweed invasion.

Oxalate contributes to the resistance of *Gaillardia grandiflora* and *Lupinus sericeus* to a phytotoxin produced by *Centaurea maculosa*. T. L. Weir, H. P. Bais, V. J. Stull, R. M. Callaway, G. C. Thelen, W. M. Ridenour, S. Bhamidi, F. R. Stermitz, and J. M. Vivanco. 2006. *Planta* 223:785–795. (J. Vivanco, Department of Horticulture and Landscape Architecture, Colorado State University, Fort Collins, CO 80523). Roots of lupine and blanketflower excrete oxalate, which negates the allelopathic effects of catechin secreted by

spotted knapweed. Root-secreted oxalate helps lupine, blanketflower, and surrounding plants to better compete with spotted knapweed.

The invasive forb, *Centaurea maculosa*, increases phosphorus availability in Montana grasslands. A. S. Thorpe, V. Archer, and T. H. DeLuca. 2006. *Applied Soil Ecology* 32:118–122. (Division of Biological Sciences, University of Montana, Missoula, MT 59812). Spotted knapweed appears to have the ability to increase the availability of phosphorus in some soils which, in turn, benefits spotted knapweed growth.

Virus infection and grazing exert counteracting influences on survivorship of native bunchgrass seedlings competing with invasive exotics. C. M. Malmstrom, C. J. Stoner, S. Brandenburg, and L. A. Newton. 2006. *Journal of Ecology* 94:264–275. (Department of Plant Biology, Michigan State University, East Lansing, MI 48824). In California, clipping seedlings of native bunchgrasses (purple needlegrass and big squirreltail) increased their rate of survival.

Yellow starthistle continues its spread in California. M. J. Pitcairn, S. Schoenig, R. Yacoub, and J. Gendron. 2006. *California Agriculture* 60(2):83–90. (California Department of Food and Agriculture, 1220 N St, Sacramento, CA 95814). Most yellow starthistle infestations currently occur in northern California, but future invasions and spread are predicted in the coastal region of southern California. Between 1985 and 2002, yellow starthistle infestations increased in all regions of California except the interior Great Basin and the desert regions.

Rehabilitation/Restoration

2006–2007 Weed management handbook for Montana, Utah, and Wyoming. S. A. Dewey, S. F. Enloe, F. Menalled, S. D. Miller, R. E. Whitesides, L. Johnson, W. E. Dyer, M. A. Ferrell, and R. Richards. 2006. Montana, Utah, and Wyoming Cooperative Extension Services at Bozeman, Montana; Logan, Utah; and Laramie, Wyoming. (\$15; Publications, Montana State University Extension Service, P.O. Box 172040, Bozeman, MT 59717 or <http://uwadmnweb.uwyo.edu/UWCES/WeedManagementHandbook.asp>). Up-to-date reference of herbicide recommendations for controlling weeds on rangeland, cropland, riparian areas, and right-of-ways in Montana, Utah, and Wyoming.

Changes in non-target arthropod populations following application of liquid bait formulations of insecticides for control of rangeland grasshoppers. D. I. Smith, J. A. Lockwood, A. V. Latchinsky, and D. E. Legg. 2006. *International Journal of Pest Management* 52:125–139. (J. Lockwood, Department of Renewable Resources, University of Wyoming, Laramie, WY 82071). All treatments effectively reduced grasshopper densities on native rangeland in Wyoming without significant effects on nontarget insects, spiders, etc.

Experimentally induced colony expansion by black-tailed prairie dogs (*Cynomys ludovicianus*) and implications for conservation. S. Milne-Laux and R. A. Sweitzer. 2006. *Journal of Mammalogy* 87:296–303. (Department of Biological, Geological and Environmental Sciences, Cleveland State University, Cleveland, OH 44115). In North Dakota grassland, a combination of controlled burns and mechanical brush removal enhanced habitat for black-tailed prairie dogs.

Fuel breaks affect nonnative species abundance in California plant communities. K. E. Merriam, J. E. Keeley, and J. L. Beyers. 2006. *Ecological Applications* 16:515–527. (US Forest Service, PO Box 11500, Quincy, CA 95971). Fuel breaks can provide sites for weed establishment and invasion into adjacent areas. Fuel break construction and maintenance should minimize exposure of bare ground.

Habitat edge, land management, and rates of brood parasitism in tallgrass prairie. M. A. Patten, E. Shochat, D. L. Reinking, D. H. Wolfe, and S. K. Sherrod. 2006. *Ecological Applications* 16:687–695. (Sutton Avian Research Center, University of Oklahoma, PO Box 2007, Bartlesville, OK 74005). Brood parasitism of grassland birds was highest near tree cover and in areas burned in spring and subsequently grazed by cattle. Removing trees and shrubs from tallgrass prairie, less frequent burning in spring, or lower cattle grazing intensities may decrease brood parasitism.

Henslow's sparrow winter-survival estimates and response to prescribed burning. B. S. Thatcher, D. G. Krementz, and M. S. Woodrey. 2006. *Journal of Wildlife Management* 70:198–206. (Department of Forestry, Fisheries and Wildlife, University of Tennessee, Knoxville, TN 37996). In coastal pine savannas of Mississippi, winter habitat for Henslow's sparrows will be improved by prescribed burning of a large percentage of savannas each year.

Weed control in forage legumes. L. J. Wrage and D. L. Deneke. 2006. South Dakota State University Extension Fact Sheet FS 525L. (<http://agbiopubs.sdstate.edu/articles/FS525L.pdf>). This 12-page guide provides herbicide recommendations for controlling weeds in new and established stands of forage legumes.

Socioeconomics

Nature needs us. W. E. Howard. 2006. Xlibris Corporation, Philadelphia, PA. (ISBN 1-4134-9628-8 softcover or 1-4134-9628-6 hardcover). This 271-page nontechnical book presents an in-depth analysis of the reasons why nature cannot manage most human-modified environments alone. The book stimulates readers to explore their personal convictions about what is ethically right or wrong as humans decide which animals should live and how the others should die.

Soils

Soil lichen and moss cover and species richness can be highly dynamic: the effects of invasion by the annual exotic grass *Bromus tectorum*, precipitation, and temperature on biological soil crusts in SE Utah. J. Belnap, S. L. Phillips, and T. Troxler. 2006. *Applied Soil Ecology* 32:63–76. (Southwest Biological Sciences Center, 2290 South Resource Blvd, Moab, UT 84532). Cover of both lichens and mosses can increase dramatically over short time periods in response to weather conditions (eg, air temperatures).

Soil response to long-term grazing in the northern Great Plains of North America. M. A. Liebig, J. R. Gross, S. L. Kronberg, J. D. Hanson, A. B. Frank, and R. L. Phillips. 2006. *Agriculture, Ecosystems and Environment* 115:270–276. (USDA-ARS, Northern Great Plains Research Lab, PO Box 459, Mandan, ND 58554). After more than 70 years of cattle grazing in spring–summer–fall, soils did not differ much between heavily and moderately grazed sites. Fall application of nitrogen fertilizer decreased soil pH and cation exchange capacity and increased nitrous oxide emissions.

The role of the native soil community in the invasion ecology of spotted (*Centaurea maculosa* auct. Non Lam.) and diffuse (*Centaurea diffusa* Lam.) knapweed. P. J. Meiman, E. F. Redente, and M. W. Paschke. 2006. *Applied Soil Ecology* 32:77–88. (University of Wyoming, PO Box 470, Lander, WY 82520). Native rangeland soils benefited spotted knapweed growth more than they benefited bluebunch wheatgrass or diffuse knapweed.

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