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

Are livestock weight gains affected by black-tailed prairie dogs? J. D. Derner, J. K. Detling, and M. F. Antolin. 2006. *Frontiers in Ecology and the Environment* 4:459–464. (USDA-ARS, High Plains Grasslands Research Station, 8404 Hildreth Rd., Cheyenne, WY 82009). When 20% of the pasture was occupied by prairie dogs, steer weight gains were reduced 5.5%, whereas when 60% of the pasture was occupied, steer weight gains were reduced 13.9%.

Behavioral responses of bison and elk in Yellowstone to snowmobiles and snow coaches. J. J. Borkowski, P. J. White, R. A. Garrott, T. Davis, A. R. Hardy, and D. J. Reinhart. 2006. *Ecological Applications* 16:1911–1925. (Dept. of Mathematical Sci., Montana State Univ., Bozeman, MT 59717). Found no evidence that winter recreation via snowmobiles or snow coaches during the past 35 years has affected elk or bison populations in Yellowstone National Park.

Grazing Management

Browsing of western snowberry by goats and sheep. A. J. Smart, J. Daniel, K. Bruns, and J. Held. 2006. *Sheep and Goat Research Journal* 21:1–5. (Dept. of Animal and Range Sci., South Dakota State Univ., Brookings, SD 57007). Concluded that goat browsing in late June is a viable alternative to herbicides for controlling western snowberry in tallgrass prairie.

Prairiegrass-brassica hybrid swards for autumn dry matter production. D. P. Belesky, J. P. S. Neel, and J. M. Ruckle. 2006. *Agronomy Journal* 98:1227–1235. (USDA-ARS, Appalachian Farming Systems Research Center, 1224 Airport Rd., Beaver, WV 25813). Improved prairiegrass (*Bromus catharticus*) and a brassica hybrid seeded together can provide suitable fall pasture in the eastern United States.

Pyrrolizidine alkaloids in *Senecio madagascariensis* from Australia and Hawaii and assessment of possible livestock poisoning. D. R. Gardner, M. S. Thorne, R. J. Molyneux, J. A. Pfister, and A. A. Seawright. 2006. *Biochemical Systematics and Ecology* 34:736–744. (USDA-ARS, Poisonous Plant Research Lab, 1150 East 1400 North, Logan, UT 84341). The alkaloid content of this *Senecio* species makes it a significant risk to livestock when grazing heavy infestations on the Hawaiian Islands.

Seasonal changes in dry matter partitioning, yield, and crude protein of intermediate wheatgrass and smooth bromegrass. A. J. Smart, W. H. Schacht, J. D. Volesky, and L. E.

Moser. 2006. *Agronomy Journal* 98:986–991. (Dept. of Animal and Range Sci., South Dakota State Univ., Brookings, SD 57007). In Nebraska, plant growth and nutritive value of intermediate wheatgrass and smooth brome followed a similar pattern, but intermediate wheatgrass tended to be 1 to 2 weeks behind smooth brome.

Hydrology/Riparian

Riparian ecohydrology: Regulation of water flux from the ground to the atmosphere in the Middle Rio Grande, New Mexico. J. R. Cleverly, C. N. Dahm, J. R. Thibault, D. E. McDonnell, and J. E. A. Coonrod. 2006. *Hydrological Processes* 20:3207–3225. (Dept. of Biology, Univ. of New Mexico, Albuquerque, NM 87131). Both salt cedar and native cottonwood trees transpire large quantities of water when conditions are favorable. In the Middle Rio Grande, salt cedar prefers sites where summer flooding and cold air drainage occurs, whereas cottonwood prefers areas with groundwater within 6.5 feet of the surface.

River channel dynamics following extirpation of wolves in northwestern Yellowstone National Park, USA. R. L. Beschta and W. J. Ripple. 2006. *Earth Surface Processes and Landforms* 31:1525–1539. (College of Forestry, Oregon State Univ., Corvallis, OR 97331). Excessive elk grazing and browsing of streamside vegetation in winter–spring decreased willow cover and caused stream channels to become wider and more incised.

Shrubs, streamflow, and the paradox of scale. B. P. Wilcox, M. K. Owens, W. A. Dugas, D. N. Ueckert, and C. R. Hart. 2006. *Hydrological Processes* 20:3245–3259. (Dept. of Rangeland Ecology and Management, Texas A&M Univ., College Station, TX 77845). Authors conclude that significant increases in water yield are much more likely to result from reducing salt cedar in riparian areas than from reducing Ashe juniper or mesquite trees on upland sites.

Springs on rangelands: Runoff dynamics and influence of woody plant cover. Y. Huang, B. P. Wilcox, L. Stern, and H. Perotto-Baldivieso. 2006. *Hydrological Processes* 20:3277–3288. (Dept. of Rangeland Ecology and Management, Texas A&M Univ., College Station, TX 77843). In central Texas, removal of Ashe juniper increased streamflow from a spring.

Management Planning

Collaborative governance for sustainable water resources management: The experience of the Inter-municipal Initiative for the Integrated Management of the Ayuquilla River Basin, Mexico. S. G. Montero, E. S. Castellon, L. M. M. Rivera, S. G. Ruvalcaba, and J. J. Llamas. 2006. *Environment and Urbanization* 18:297–313. (Manantlan Biodiversidad Occidente AC, Tenacatita 134, Autlan de Navarro 48900, Jalisco, Mexico). Describes a successful collaboration among 10 municipalities to reduce river pollution and promote more sustainable management of natural resources within and across their administrative boundaries.

Plant Ecology

A lack of evidence for an ecological role of the putative allelochemical (+/–)-catechin in spotted knapweed invasion success. A. C. Blair, S. J. Nissen, G. R. Brunk, and R. A. Hufbauer. 2006. *Journal of Chemical Ecology* 32:2327–2331. (Dept. of Bioagricultural Sci. and Pest Management, Colorado State Univ., Fort Collins, CO 80523). Results shed increasing doubt on whether the (+/–) catechin in spotted knapweed is allelopathic under field conditions.

Plant-soil feedbacks contribute to the persistence of *Bromus inermis* in tallgrass prairie. M. A. Vinton and E. M. Goergen. 2006. *Ecosystems* 9:967–976. (Dept. of Biology, Creighton Univ., Omaha, NE 68178). Decreased amounts of plant litter and lower levels of soil nitrogen may help native tallgrass prairie grasses to compete better with smooth brome.

Population and clonal level responses of a perennial grass following fire in the northern Chihuahuan Desert. P. B. Drewa, D. P. C. Peters, and K. M. Havstad. 2006. *Oecologia* 150:29–39. (Dept. of Biology, Case Western Reserve Univ., Cleveland, OH 44106). Even after 2 growing seasons of recovery, black grama canopy cover was reduced 42% by a June headfire. Small plants were harmed more than larger plants. Black grama response to fire was unaffected by cattle grazing.

The influence of aridity and fire on Holocene Prairie communities in the eastern Prairie Peninsula. D. M. Nelson, F. S. Hu, E. C. Grimm, B. B. Curry, and J. E. Slate. 2006. *Ecology* 87:2523–2536. (Ecology and Evolutionary Biology, Univ. of Illinois, 505 South Goodwin Ave., Urbana, IL 61801). The prehistorical species composition of tallgrass prairie varied with climatic fluctuations. Fire-sensitive tree species declined and herbaceous prairie plants increased during drier climatic periods.

Twentieth century forest-grassland ecotone shift in Montana under differing livestock grazing pressure. T. T. Sankey, C. Montagne, L. Graumlich, R. Lawrence, and J. Nielsen. 2006. *Forest Ecology and Management* 234:282–292. (Campus Box 8130, Idaho State Univ., Pocatello, ID 83209). Levels of cattle grazing intensity during the past 60 years did not influence encroachment of aspen or Douglas-fir into southwestern Montana grasslands.

Xeric limestone prairies of eastern United States: Review and synthesis. P. J. Lawless, J. M. Baskin, and C. C. Baskin. 2006. *Botanical Review* 72:235–272. (Dept. of Biology, Univ. of Kentucky, Lexington, KY 40506). Discusses the flora, soils, and plant successional dynamics of eastern US prairies that occur on shallow, rocky limestone soils.

Rehabilitation/Restoration

Assessing grassland restoration success: Relative roles of seed additions and native ungulate activities. L. M. Martin and B. J. Wilsey. 2006. *Journal of Applied Ecology* 43:1098–1109. (Dept. of Biology, Univ. of Nebraska, 6001 Dodge St., Omaha, NE 68182). Seedling emergence of rare forbs and grasses increased in tallgrass prairie when broadcast seeding was followed by bison and elk grazing.

Should heterogeneity be the basis for conservation? Grassland bird response to fire and grazing. S. D. Fuhlendorf, W. C. Harrell, D. M. Engle, R. G. Hamilton, C. A. Davis, and D. M. Leslie, Jr. 2006. *Ecological Applications* 16:1706–1716. (Dept. of Plant and Soil Sci., Oklahoma State Univ., Stillwater, OK 74078). Prescribed burning and grazing were combined to create heterogeneous habitat that increased the diversity of tallgrass prairie birds.

TIPS for fighting weeds on small acreages in Montana. D. Martin, project coordinator. 2006. (Conservation Districts Bureau, Montana Dept. of Natural Resources and Conservation, PO Box 201601, Helena, MT 59620-1601). This 56-page color glossy bulletin was written for small-acreage landowners who may be unfamiliar with weed management principles and techniques.

Socioeconomics

Ideology and scientific credibility: Environmental policy in the American Pacific Northwest. B. S. Steel, D. Lach, and V. A. Satyal. 2006. *Public Understanding of Science* 15:481–495. (Dept. of Political Sci., Oregon State Univ., Corvallis, OR 97331). When participating in environmental policy discussions, conservatives are less likely to view science and scientists as objective than are liberals.

The values and vulnerabilities of metaphors within the environmental sciences. M. S. Carolan. 2006. *Society and Natural Resources* 19:921–930. (Dept. of Sociology, Colorado State Univ., Fort Collins, CO 80523). A random sample of articles from 3 refereed environmental science journals (*Society and Natural Resources*, *Conservation Biology*, and *Ecology*) revealed that all 3 journals used metaphors equally to make value statements about how nature should be. This article suggests alternative language for authors to use when discussing scientific findings related to environmental issues.

Soils

Storage and dynamics of carbon and nitrogen in soil physical fractions following woody plant invasion of grassland. J. D. Liao, T. W. Boutton, and J. D. Jastrow. 2006. *Soil Biology and Biochemistry* 38:3184–3196. (T. Boutton, Dept. of Rangeland Ecology and Management, Texas A&M Univ., College Station, TX 77843). In the Rio Grande Plains of Texas, soil carbon and nitrogen were 100%–500% less in remnant grasslands than where trees and shrubs have invaded during the past 130 years.

Jeff Mosley is Professor of Range Science and Extension Range Management Specialist, Department of Animal and Range Sciences, Montana State University, Bozeman, MT 59717.