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

Chukar seasonal survival and probable causes of mortality. A. C. Robinson, R. T. Larsen, J. T. Flinders, and D. L. Mitchell. 2009. *Journal of Wildlife Management* 73:89–97. (Dept of Plant and Wildlife Sciences, Brigham Young Univ, Provo, UT 884602, USA). In western Utah, predation by raptors was substantial and was the largest single cause of mortality for chukars, an upland game bird.

Merriam's turkey nest survival and factors affecting nest predation by mammals. C. P. Lehman, M. A. Rumble, L. D. Flake, and D. J. Thompson. 2008. *Journal of Wildlife Management* 72:1765–1774. (Custer State Park, 13329 US Highway 16A, Custer, SD, USA). Coyotes were the primary predator on turkey nests. Greater shrub cover and visual obstruction around turkey nests reduced the risk of predation.

Small mammal microhabitat associations and response to grazing in Oregon. A. N. Johnston and R. G. Anthony. 2008. *Journal of Wildlife Management* 72:1736–1746. (College of Forest Resources, Univ of Washington, Seattle, WA 98195, USA). In mixed-conifer forests and oak woodlands, sites grazed heavily by cattle had fewer voles, mice, and woodrats than lightly grazed sites.

Were native people keystone predators? A continuous-time analysis of wildlife observations made by Lewis and Clark in 1804–1806. C. E. Kay. 2007. *Canadian Field Naturalist* 121:1–16. (Dept of Political Science, Utah State Univ, Logan, UT 84322, USA). Prior to the arrival of Euro-Americans, wildlife populations and ecosystem processes in the Northern Great Plains and Northern Rocky Mountains were controlled by Native American hunting. Unhunted ungulate populations are outside the range of historical variability.

Grazing Management

Annual cool season crops for grazing by beef cattle. A Canadian review. D. McCartney, J. Fraser, and A. Ohama. 2008. *Canadian Journal of Animal Science* 88:517–533. (A. Ohama, Agriculture and Agri-Food Canada, 6000 C & E Trail, Lacombe, AB T4L 1W1, Canada). Options for extending the grazing season and reducing beef production costs include swath grazing of a cereal crop, grazing the regrowth from silage mixtures of spring and winter cereals, or fall grazing annual Italian ryegrass.

Heterogeneity of thermal extremes: driven by disturbance or inherent in the landscape. R. F. Limb, S. D. Fuhlendorf, and D. E. Townsend. 2009. *Environmental Management* 43:100–106. (Dept of Natural Resource Ecology and Management, Oklahoma State Univ, Stillwater, OK 74078, USA). In mixed-grass prairie in Oklahoma, soil surface temperature did not differ among heavy, moderate, and no cattle grazing.

Influence of advancing season on dietary composition, intake, site of digestion, and microbial efficiency in beef steers grazing a native range in western North Dakota. H. J. Cline, B. W. Nelville, G. P. Lardy, and J. S. Caton. 2009. *Journal of Animal Science* 87:375–383. (J. Caton, Dept of Animal Science, North Dakota State Univ, Fargo, ND 58108, USA). When grazing occurs after late September, nutritive quality of mixed-grass prairie forage is too low to support adequate beef cattle performance.

Hydrology/Riparian

Field guide for the identification and use of common riparian woody plants of the Intermountain West and Pacific Northwest regions. C. Hoag, D. Tilley, D. Harris, and K. Pendegrass. 2008. USDA Natural Resources Conservation Service. (USDA-NRCS, Plant Materials Center, PO Box 296, Aberdeen, ID 83210, USA). Provides simple characteristics for identifying riparian trees and shrubs during summer and winter.

Recent history (1988–2004) of beaver dams along Bridge Creek in central Oregon. R. Demmer and R. L. Beschta. 2008. *Northwest Science* 82:309–318. (R. Beschta, College of Forestry, Oregon State Univ, Corvallis, OR 97330, USA). Sediment deposited when beaver dams breached during high stream flows formed seedbeds that helped willows, black cottonwood, and other riparian plants to establish.

Response of songbirds to riparian willow habitat structure in the Greater Yellowstone Ecosystem. B. F. M. Olechnowski and D. M. Debinski. 2008. *Wilson Journal of Ornithology* 120:830–839. (Dept of Ecology, Evolution and Organismal Biology, Iowa State Univ, Ames, IA 50014, USA). In northwestern Wyoming and southwestern Montana, songbird diversity and abundance were greater where willows were taller (5 feet vs. 2 feet).

Russian olive, *Elaeagnus angustifolia*, alters patterns in soil nitrogen pools along the Rio Grande River, New Mexico, USA. J. P. DeCant. 2008. *Wetlands* 28:896–904. (1652 Norcross Dr, Oregon, OH 43616, USA). Soil nitrogen levels were enriched beneath the canopies of Russian olive trees, but the added nitrogen was not utilized by cottonwood trees.

Measurements

Comparing fire severity models from post-fire and pre/post-fire differenced imagery. K. T. Weber, S. Seefeldt, C. Moffet, and J. Norton. 2008. *GIScience and Remote Sensing* 45:392–405. (GIS Center, Gravely Hall, Idaho State Univ, Pocatello, ID 83209, USA). This article recommends using fire severity models developed from post-fire imagery only, rather than models based on a combination of pre- and post-fire imagery, to assess the severity of wildfires in sagebrush steppe.

Plant–Animal Interactions

Grasshopper herbivory affects native plant diversity and abundance in a grassland dominated by the exotic grass *Agropyron cristatum*. D. H. Branson and G. A. Sword. 2009. *Restoration Ecology* 17:89–96. (USDA-ARS, Northern Plains Agricultural Research Lab, 1500 N Central Ave, Sidney, MT 59270, USA). Native plant defoliation by grasshoppers reduced the diversity and abundance of native plants on a crested wheatgrass-dominated site in western North Dakota.

Plant Ecology

Are lightning fires unnatural? A comparison of aboriginal and lightning ignition rates in the United States. C. E. Kay. 2007. *Proceedings of the Tall Timbers Fire Ecology Conference* 23:16–28. (Dept of Political Science, Utah State Univ, Logan, UT 84322, USA). Concludes that "lightning-caused fires may have been largely irrelevant for at least the last 10,000 years. Instead, the dominant ecological force likely has been aboriginal burning."

Differential soil seed bank longevity of *Paederia foetida* L., an invasive woody vine, across three habitats in Florida. H. Liu and R. W. Pemberton. 2008. *Journal of the Torrey Botanical Society* 135:491–496. (R. Pemberton, USDA-ARS, Invasive Plant Research Lab, 3225 College Ave, Fort Lauderdale, FL 33314, USA). Skunk vine seeds in the soil remain viable for only 2–3 years.

Fire regimes, fire ecology, and fire management in Mexico. D. A. R. Trejo. 2008. *Ambio* 37:548–556. (Division of Ciencias Forestales, Univ de Autonoma Chapingo, Chapingo 59230, Edo, Mexico, Mexico). This article discusses the fire ecology of the principal vegetation types in Mexico, including grasslands, shrublands, savannas, and tropical rain forests.

Fire severity and ecosystem responses following crown fires in California shrublands. J. E. Keeley, T. Brennan, and A. H. Pfaff. 2008. *Ecological Applications* 18:1530–1546. (US Geological Survey, Sequoia Kings Canyon Field Station, Three Rivers, CA 93271, USA). Although California chaparral often burns in large, high-intensity crown fires, fire severity effects on vegetation regeneration are largely absent 2 years post-burn.

Photosynthesis and water use efficiency of the association between *Larrea tridentata* (DC) Cov. and *Muhlenbergia porteri* Scribn. E. Castellanos-Perez, A. G. de Soyza, and G. B. Donart. 2008. *Phyton-International Journal of Experimental Botany* 77:297–320. (G. Donart, Dept of Animal and Range Sciences, New Mexico State Univ, Las Cruces, NM 88003, USA). In spring, bush muhly plant growth was unaffected by nearby creosotebush plants, but bush muhly growth in summer was reduced by creosotebush.

Rehabilitation/Restoration

Mammals in mechanically thinned and non-thinned mixed-coniferous forest in the Sacramento Mountains, New Mexico. C. R. Wampler, J. K. Frey, D. M. VanLeeuwen, J. C. Boren, and T. T. Baker. 2008. *Southwestern Naturalist* 53:431–443. (J. Frey, Dept of Fishery and Wildlife Science, New Mexico State Univ, Las Cruces, NM 88003, USA). Mechanical thinning of older forest stands to enhance timber production and to reduce woody fuels also increased the diversity and abundance of small mammals, although deer mice and red squirrels were unaffected by thinning.

Native consumers and seed limitation constrain the restoration of a native perennial grass in exotic habitats. J. L. Orrock, M. S. Witter, and O. J. Reichman. 2009. *Restoration Ecology* 17:148–157. (National Center for Ecological Analysis and Synthesis, Univ of California, Santa Barbara, CA 93101, USA). Squirrrels and rabbits impeded establishment of purple needlegrass seedlings in restoration plantings, but small rodent impacts were overcome by doubling the purple needlegrass seeding rate.

Post-fire seeding on Wyoming big sagebrush ecological sites: regression analyses of seeded nonnative and native species densities. M. E. Eiswerth, K. Krauter, S. R. Swanson, and M. Zielinski. 2009. *Journal of Environmental Management* 90:1320–1325. (Dept of Economics, Univ of Wisconsin, Whitewater, WI 53190, USA). In post-fire seedings in northern Nevada, increasing the seeding rates of forbs increased their density, but increasing the seeding rates of grasses did not increase grass seedling density.

Restoration of California native grasses and clovers: the roles of clipping, broadleaf herbicide, and native grass density. M. E. Lulow. 2008. *Restoration Ecology* 16:584–593. (Irvine Ranch Land Reserve Trust, 320 Commerce Dr, Suite 150, Irvine, CA 92692, USA). Clipping in early spring increased the growth of native and non-native clovers without affecting native bunchgrass cover.

Short-term response of herpetofauna to various burning regimes in the South Texas Plains. D. C. Ruthven, R. T. Kazmaier, and M. W. Janis. 2008. *Southwestern Naturalist* 53:480–487. (Texas Parks and Wildlife Dept, Matador Wildlife Management Area, 3036 FM 3256, Paducah, TX 79248, USA). Prescribed fires during the growing season increased the diversity and abundance of reptiles and amphibians, whereas dormant-season fires did not have much effect.

Woody plant effects on soil seed banks in a central Texas savanna. L. E. D'Souza and P. W. Barnes. 2008. *Southwestern Naturalist* 53:495–506. (Weyerhauser, Western Timberlands Research, Mailstop WTC 1B10, PO Box 9777, Federal Way, WA 98063, USA). Ashe juniper encroachment alters grassland seed banks. Artificial seeding is necessary to restore native grassland plant communities following removal of Ashe juniper trees.

Socioeconomics

Fragmentation of rangelands: implications for humans, animals, and landscapes. N. T. Hobbs, K. A. Galvin, C. J. Stokes, J. M. Lackett, A. J. Ash, R. B. Boone, R. S. Reid, and P. K. Thornton. 2008. *Global Environmental Change-Human and Policy Dimensions* 18:776–785. (Natural Resource Ecology Lab, Colorado State Univ, Fort Collins, CO 80523, USA). This article discusses the causes and consequences of rangeland fragmentation worldwide, and it reviews the policy options for addressing fragmentation.

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