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

Degree-day requirements for eight economically important grasshoppers (Orthoptera: Acrididae) in Nebraska using field data. M. L. Brust, W. W. Hoback, and R. J. Wright. 2009. *Environmental Entomology* 38:1521–1526. (W. Hoback, Dept of Biology, Univ of Nebraska, Kearney, NE 68849, USA). Article presents degree-day requirements to reach adulthood for eight species of rangeland grasshoppers in western Nebraska. This information can be used to optimize the timing of grasshopper control treatments.

Factors affecting nest-site selection and nest success of translocated greater sage grouse. R. J. Baxter, J. T. Flinders, D. G. Whiting, and D. L. Mitchell. 2009. *Wildlife Research* 36:479–487. (Dept of Plant and Animal Sciences, Brigham Young Univ, Provo, UT 84602, USA). Total shrub canopy cover was the only vegetation characteristic that affected nesting success by female sage grouse. Successful nest sites had more total shrub canopy cover than random sites.

Factors associated with arrival densities of grasshopper sparrow (*Ammodramus savannarum*) and Baird's sparrow (*A. bairdii*) in the upper Great Plains. M. A. Ahlering, D. H. Johnson, and J. Faaborg. 2009. *Auk* 126:799–808. (Center for Conservation and Evolutionary Genetics, Smithsonian Institute, Washington, DC 20008, USA). In North Dakota and Saskatchewan in spring, grasshopper sparrow densities were strongly and negatively related to woody cover. Baird's sparrow densities were negatively related to vegetation height and vegetation density near the ground.

Short-term responses of breeding birds of grassland and early successional habitat to timing of haying in northwestern Arkansas. J. D. Luscier and W. L. Thompson. 2009. *Condor* 111:538–544. (Dept of Biological Sciences, Univ of Arkansas, Fayetteville, AR 72701, USA). Postponing haying until mid- to late June dramatically reduced the number of bird nests destroyed by haying, yet reductions in hay quality and production were minimal.

Survival of greater sage-grouse chicks and broods in the northern Great Basin. M. A. Gregg and J. A. Crawford. 2009. *Journal of Wildlife Management* 73:904–913. (Mid-Columbia River National Wildlife Refuge Complex, US Fish and Wildlife Service, Burbank, WA 99323, USA). Habitat management that promotes 1) Lepidoptera insects and 2)

abundance of slender phlox during May and June (i.e., early brood-rearing) should enhance survival of sage-grouse chicks and broods.

Winter use of south Florida dry prairie by two declining grassland passerines. A. B. Butler, J. A. Martin, W. E. Palmer, and J. P. Carroll. 2009. *Condor* 111:511–522. (Mississippi Dept of Wildlife, Fisheries, and Parks, 1505 Eastover Dr, Jackson, MS 39211, USA). Dry prairie of central Florida needs to be managed with 1-year to 3-year fire return intervals in order to maintain wintering habitat for grassland birds.

Grazing Management

Quantifying soil organic carbon in forage-based cow-calf congregation-grazing zone interface. G. C. Sigua, S. W. Coleman, and J. P. Albano. 2009. *Nutrient Cycling in Agroecosystems* 85:215–223. (USDA-ARS, Subtropical Agricultural Research Station, Brooksville, FL 34601, USA). Soil organic carbon in Florida pastures was not elevated at cattle congregation sites such as mineral feeders, water troughs, or shaded loafing areas.

Hydrology/Riparian

An ecological risk assessment of the acute and chronic effects of the herbicide clopyralid to rainbow trout (*Oncorhynchus mykiss*). J. F. Fairchild, A. L. Allert, K. P. Feltz, K. J. Nelson, and J. A. Valle. 2009. *Archives of Environmental Contamination and Toxicology* 57:725–731. (US Geological Survey, Columbia Environmental Research Center, 4200 New Haven Rd, Columbia, MO 65201, USA). Clopyralid herbicide presents little to no risk to rainbow trout or other salmonids such as the threatened bull trout.

Plant–Animal Interactions

Animal disturbances promote shrub maintenance in a desertified grassland. D. J. Eldridge, W. G. Whitford, and B. D. Duval. 2009. *Journal of Ecology* 97:1302–1310. (Dept of Environment, Climate Change, and Water, Univ of New South Wales, Sydney, New South Wales 2052, Australia). In the Chihuahuan Desert, degraded grasslands had greater densities of mounds created by kangaroo rats and badgers.

Can kangaroo rat graminivory contribute to the persistence of desertified shrublands? G. I. H. Kerley and W. G. Whitford. 2009. *Journal of Arid Environments* 73: 651–657. (Centre for African Conservation Ecology, Nelson Mandela Metropolitan Univ, POB 77000, ZA-6031, Port Elizabeth, South Africa). Graminivory by kangaroo rats limits grass recruitment and abundance, thereby helping desertified shrublands to persist.

Comparison of ground beetle (Coleoptera: Carabidae) assemblages in Rocky Mountain savannas invaded and un-invaded by an exotic forb, spotted knapweed. A. K. Hansen, Y. K. Ortega, and D. L. Six. 2009. *Northwest Science* 83:348–360. (Dept of Entomology, Univ of California, Riverside, CA 92521, USA). Ground beetle diversity was decreased by spotted knapweed invasion.

Plant Ecology

Effects of fire and environmental variables on plant structure and composition in grazed salt desert shrublands of the Great Basin (USA). K. Haubensak, C. D'Antonio, and D. Wixon. 2009. *Journal of Arid Environments* 73:643–650. (School of Forestry, Northern Arizona Univ, Flagstaff, AZ 86011, USA). Wildfire in salt desert of northwestern Nevada severely reduced bud sagebrush and shadscale.

Effects of regular salt marsh haying on marsh plants, algae, invertebrates and birds at Plum Island Sound, Massachusetts. R. N. Buchsbaum, L. A. Deegan, J. Horowitz, R. H. Garritt, A. E. Giblin, J. P. Ludlam, and D. H. Shull. 2009. *Wetlands Ecology and Management* 17:469–487. (Massachusetts Audubon Society, 346 Grapevine Rd, Wenham, MA 01984, USA). Haying of a salt marsh had no effect on plant species diversity or aboveground productivity. The only effect was that haying favored saltmeadow cordgrass over smooth cordgrass. Migratory shorebirds prefer foraging for insects in recently hayed marshes.

Fire in Chihuahuan Desert grassland: short-term effects on vegetation, small mammal populations, and faunal pedoturbation. A. Killgore, E. Jackson, and W. G. Whitford. 2009. *Journal of Arid Environments* 73:1029–1034. (USDA-ARS, Jornada Experimental Range, MSC 3JER, Las Cruces, NM 88003, USA). Prescribed fire applied in July killed 100% of broom snakeweed, 77% of Torrey's jointfir, and 36% of yucca. One year post-burn, black grama basal cover remained lower in burned areas, but all other perennial grasses were unaffected by the fire.

Interaction of historical and nonhistorical disturbances maintains native plant communities. K. W. Davies, T. J. Svejcar, and J. D. Bates. 2009. *Ecological Applications* 19: 1536–1545. (USDA-ARS, Eastern Oregon Agricultural Research Center, 67826-A Hwy 205, Burns, OR 97720, USA). In Wyoming big sagebrush steppe of eastern Oregon, cheatgrass increased dramatically when fire burned ungrazed sites. In contrast, cheatgrass did not increase after burning in sites where light to moderate cattle grazing had prevented excessive litter accumulation before the fire.

Response of the shortgrass steppe plant community to fire. M. R. Scheintaub, J. D. Derner, E. F. Kelly, and A. K. Knapp. 2009. *Journal of Arid Environments* 73:1136–1143. (POB 3237, Hailey, ID 83333, USA). Spring burning of shortgrass prairie in northern Colorado increased perennial forbs, decreased annual grasses, and increased annual forbs.

The biology of Canadian weeds. 143. *Apocynum cannabinum* L. A. DiTommaso, D. R. Clements, S. J. Darbyshire, and J. T. Dauer. 2009. *Canadian Journal of Plant Science* 89:977–992. (Dept of Crop and Soil Sciences, Cornell Univ, Ithaca, NY 14853, USA). Hemp dogbane is a perennial forb native to the United States and southern Canada that is increasingly becoming a weed problem in western North America.

Rehabilitation/Restoration

A spatial model to prioritize sagebrush landscapes in the Intermountain West (USA) for restoration. C. W. Meinke, S. T. Knick, and D. A. Pyke. 2009. *Restoration Ecology* 17:652–659. (S. Knick, US Geological Survey, Forest and Rangeland Ecosystem Science Center, Boise, ID 83706, USA). Authors identified 14.3 million acres and 12.6 million acres of Wyoming big sagebrush habitat and mountain big sagebrush habitat, respectively, where restoration treatments should be applied in southwestern Idaho, northern Nevada, and eastern Oregon.

Comparison of emergence speed and sterility in two sterile annual hybrid cereal grasses developed for use in restoration. C. Morris and E. W. Schupp. 2009. *Restoration Ecology* 17:678–685. (Dept of Wildland Resources, Utah State Univ, Logan, UT 84322, USA). In a comparison between two grasses commonly used in restoration seedings, Regreen (a sterile hybrid cross of wheat × tall wheatgrass) consistently emerged faster than triticale (a sterile hybrid cross of wheat × cereal rye).

Forb species establishment increases with decreased grass seeding density and with increased forb seeding density in a northeast Kansas, USA, experimental prairie restoration. T. L. Dickson and W. H. Busby. 2009. *Restoration Ecology* 17:597–605. (Dept of Ecology, Evolution, and Organismal Biology, Iowa State Univ, Ames, IA 50011, USA). When including forbs into restoration seedings, these authors recommend using few grass seeds and seeding most forb seeds on localized sites where no grass seeds are included in the mixture.

The influence of soil inoculums and nitrogen availability on restoration of high-elevation steppe communities invaded by *Bromus tectorum*. H. I. Rowe, C. S. Brown, and M. W. Paschke. 2009. *Restoration Ecology* 17:686–694. (Dept of Botany and Plant Pathology, Purdue Univ, Lafayette, IN 47907, USA). In a mountain shrub-grassland site in Colorado, cheatgrass was reduced 8–10% and perennial grass was increased 11–13% by applying sucrose to the soil and by adding soil from a native site uninvaded by cheatgrass.

Socioeconomics

Bioenergy and wildlife: threats and opportunities for grassland conservation. J. E. Fargione, T. R. Cooper, D. J. Flaspohler, J. Hill, C. Lehman, T. McCoy, S. McLeod, E. J. Nelson, K. S. Oberhauser, and D. Tilman. 2009. *Bioscience* 59:767–777. (The Nature Conservancy, 1101 West River Parkway, Suite 200, Minneapolis, MN 55415). Bioenergy production, including fuel, electricity, and heat, can be compatible with wildlife, provided that bioenergy production practices focus on producing bioenergy from diverse native prairies rather than focusing on converting native rangeland to biofuel cropland.

Soils

Carrion decomposition and nutrient cycling in a semiarid shrub-steppe ecosystem. R. R. Parmenter and J. A. MacMahon. 2009. *Ecological Monographs* 79:637–661. (Valles Caldera National Preserve, POB 359, 18161 State Hwy 4, Jemez Springs, NM 87025, USA). Carrion decomposition constituted less than 1% of the landscape-scale nutrient cycling budget in sagebrush steppe of Wyoming.

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