

William K. Lauenroth

Professor
Graduate Degree Program in Ecology &
Department of Forest, Rangeland, and Watershed Stewardship
Colorado State University

Academic Training

Degree	Year	Institution	Major
B.S.	1968	Humboldt State University	Range Management
M.S.	1970	North Dakota State University	Botany
Ph.D.	1973	Colorado State University	Range Science

Positions

1973-1981	Research Ecologist, Natural Resource Ecology Laboratory, Colorado State University, Fort Collins
1981-1987	Associate Professor, Department of Range Science, Colorado State University, Fort Collins
1987-present	Professor, Graduate Degree Program in Ecology & Department of Forest, Rangeland, and Watershed Stewardship, Colorado State University, Fort Collins

Professional and Honorary Societies

Ecological Society of America
American Association for the Advancement of Science
International Association for Vegetation Science
Sigma Xi
Society for Range Management

Awards

Fellow, American Association for the Advancement of Science, 2005
Highly Cited Researcher - Original Member, Institute for Scientific Information, 2002
E. J. Dyksterhuis Distinguished Lecturer, Texas A & M University, 1998
Outstanding Achievement Award, Society for Range Management, 1989

Editorial Boards

Journal of Range Management 1983-1987
Ecological Modelling 1982-1986
Vegetatio 1990-1996
Plant Ecology 1997-2000
Oecologia 1998-2001
Journal of Ecology 1999-2004
Ecology & Ecological Monographs 2001-2003
Research Letters in Ecology 2007-

National and International Meetings

Between 1994 and 1999 I was heavily involved in the Global Change and Terrestrial Ecosystems core project of the International Geosphere-Biosphere Programme. I was involved in numerous international meetings between 1997 and 1999 to produce a synthesis of results from the first 6 years of operation of GCTE. The results were published as Walker BH, Steffen WL, Canadell J, Ingram JSI, Editors (1999). The Terrestrial Biosphere and Global Change: Implications for Natural and Managed Ecosystems. Cambridge University Press, London. I am a coauthor of 3 of the 12 chapters.

Convener and leader of the working group on simulation modeling at the 8th Cary Conference - Successes, limitations and frontiers in ecosystem science. The working group report was a chapter in the proceeding which was published by Springer Verlag, New York with the same title as the conference.

Organizer with C. D. Canham and J. J. Cole of the 9th Cary Conference on Models in Ecosystem Science. The Proceedings were published by Princeton University Press and I am the author or coauthor on 3 out of the 27 chapters and a coeditor of the book.

Recent Research Grants

Long-term ecological research program: Shortgrass Steppe (LTER). National Science Foundation. 1996-2002. (with I. C. Burke)

Ecosystem significance of soil as a long-term sink for anthropogenic additions of nitrogen. National Science Foundation. 1997-2000. (With I. C. Burke and G. E. Maciel)

Effects of plant invasions on rangeland ecosystems of eastern Colorado. Colorado State University Agricultural Experiment Station. 1998-2003.

Long-term ecological research program: Shortgrass Steppe (LTER). National Science Foundation. 2002-2008. (E. F. Kelly et al.)

Effects of plant invasions on rangeland ecosystems of eastern Colorado. Colorado State University Agricultural Experiment Station. 2003-2008.

Shortgrass Steppe Field Station National Science Foundation. 2005-2008 (with I. C. Burke)

Shortgrass Steppe Field Station CSU-Academic Enhancement Program 2005-2008 (with I. C. Burke)

Using Long-Term Chart Quadrats To Evaluate Plant Demography In The Subalpine: Rescuing The Great Basin Experimental Range Data Sets (with R. Gill, Washington State University) National Science Foundation. 2007-2009

Shortgrass Steppe Conservation National Fish and Wildlife Foundation June-October 2007

Long-term carbon and greenhouse gas consequences of fire in montane forests and woodlands of the Colorado Front Range McIntire-Stennis Formula Funding 2006-2011 (with I.C. Burke)

Students Mentored

Adler, Peter A.

Aguiar, Martin R.

Aguilera, Manuel O.

Bicak, Charles J.

Bostick, Rosalie S.

Bradford, John B.

Coffin, Debra P.

Dodd, Michael B.

Dougherty, Robert L.

Dreyfus, Adam

Epstein, Howard E.

Fair, Julie L.

Hook, Paul B.

Humphries, Hope C.

Hwang, Bernice

Lee, Catherine A.

Milchunas, Daniel G.

Munson, Seth

Paruelo, Jose M.

Sala, Osvaldo E.

Smith, David

Wells, Floye

West, William H.

Wythers, Kirk R.

Zimmerman, Gregory M.

PUBLICATIONS

Journal Articles

Lauenroth, W. K., and W. C. Whitman. 1971. A rapid method for washing roots. *J. Range Manage.* 24:308-309.

Singh, J. S., W. K. Lauenroth, and R. K. Steinhorst. 1975. Review and assessment of various techniques for estimating net aerial primary production in grasslands from harvest data. *Bot. Rev.* 41:181-232.

Lauenroth, W. K., and P. L. Sims. 1976. Evapotranspiration from a shortgrass prairie subjected to water and nitrogen treatments. *Water Resour. Res.* 12(3):437-442.

Lauenroth, W. K., and W. C. Whitman. 1977. Dynamics of dry matter production in a mixed-grass prairie in western North Dakota. *Oecologia (Berl.)* 27:339-351.

Heitschmidt, R. K., W. K. Lauenroth, and J. L. Dodd. 1978. Effects of controlled levels of sulphur dioxide on western wheatgrass in a southeastern Montana grassland. *J. Appl. Ecol.* 14:693-702.

Schwartz, C. C., W. K. Lauenroth, R. K. Heitschmidt, and J. L. Dodd. 1978. Effects of controlled levels of sulphur dioxide on the nutritional quality of western wheatgrass. *J. Appl. Ecol.* 15:703-708.

Sims, P. L., J. S. Singh, and W. K. Lauenroth. 1978. The structure and function of ten western North American grasslands. I. Abiotic and vegetational characteristics. *J. Ecol.* 66:251-285.

Lauenroth, W. K., J. L. Dodd, and P. L. Sims. 1978. The effects of water and nitrogen induced stresses on plant community structure in a semi-arid grassland. *Oecologia (Berl.)* 36:211-222.

Webb, W. L., S. Szarek, W. K. Lauenroth, R. B. Kinerson, and M. Smith. 1978. Primary productivity and water use in native forest, grassland and desert ecosystems. *Ecology* 59:1230-1247.

Coughenour, M. B., J. L. Dodd, D. C. Coleman, and W. K. Lauenroth. 1979. Partitioning of carbon and SO₂-sulfur in a native grassland. *Oecologia (Berl.)* 42:229-240.

Lauenroth, W. K., and J. L. Dodd. 1979. Response of native grassland legumes to water and nitrogen treatments. *J. Range Manage.* 32:292-294.

Lauenroth, W. K., C. Bicak, and J. L. Dodd. 1979. Sulfur accumulation in western wheatgrass exposed to three controlled SO₂ concentrations. *Plant Soil* 53:131-136.

Coughenour, M. B., W. J. Parton, W. K. Lauenroth, J. L. Dodd, and R. G. Woodmansee.

1980. Simulation of sulfur cycling in grasslands. *Ecological Modeling* 9:179-213.

Lauenroth, W. K., J. L. Dodd, and C. E. Dickinson. 1980. Biomass dynamics of blue grama in a shortgrass prairie and evaluation of a method for separating live and dead material. *J. Range Manage.* 33:210-212.

Milchunas, D. G., W. K. Lauenroth, and J. L. Dodd. 1981. Forage quality in a grassland exposed to sulfur dioxide. *J. Range Manage.* 34:282-284.

Sala, O. E., W. K. Lauenroth, W. J. Parton, and M. J. Trlica. 1981. Water status of soil and vegetation in a shortgrass steppe. *Oecologia (Berl.)* 48:327-331.

Dodd, J. L., and W. K. Lauenroth. 1981. Effects of low-level SO₂ exposure on decomposition of *Agropyron smithii* litter in the field. *Water Air Soil Pollut.* 15:257-261.

McNary, T. J., D. G. Milchunas, J. W. Leetham, W. K. Lauenroth, and J. L. Dodd. 1981. Effect of controlled low levels of SO₂ on grasshopper densities on a northern mixed-grass prairie. *J. Econ. Entomol.* 74:91-93.

Lauenroth, W. K., and J. L. Dodd. 1981. Chlorophyll reduction in western wheatgrass exposed to sulfur dioxide. *Water Air and Soil Pollut.* 15:3209-315.

Milchunas, D. G., W. K. Lauenroth, J. L. Dodd, and T. J. McNary. 1981. Effects of SO₂ exposure with nitrogen and sulfur fertilization on the growth of *Agropyron smithii* Rydb. *J. Appl. Ecol.* 18:291-302.

Parton, W. J., W. K. Lauenroth, and F. M. Smith. 1981. Water losses from a shortgrass steppe. *Agric. Meteorol.* 24:97- 109.

Dodd, J. L., W. K. Lauenroth, and R. K. Heitschmidt. 1982. Effects of controlled SO₂ exposure on net primary production and plant biomass dynamics. *J. Range Manage.* 35:572-579.

Leetham, J. W., W. Ferguson, J. L. Dodd, and W. K. Lauenroth. 1982. Design and construction of a simple continuous flow sulfur dioxide exposure chamber. *J. Air Pollut. Contr. Soc.* 32:181-182.

Milchunas, D. G., W. K. Lauenroth, and J. L. Dodd. 1982. The effect of SO₂ on 14C translocation in *Agropyron smithii* Rydb. *J. Environ. and Exp. Botany* 22:81- 91.

Leetham, J. W., T. J. McNary, J. L. Dodd, and W. K. Lauenroth. 1982. Response of field populations of soil nematodes, rotifers and tardigrades to three levels of season-long sulfur dioxide exposures. *Water Air Soil Pollut.* 17:343- 356.

Sala, O. E., and W. K. Lauenroth. 1982. Small rainfall events: An ecological role in semiarid regions. *Oecologia (Berl.)* 53:301-304.

- Sala, O. E., W. K. Lauenroth, and C. P. P. Reid. 1982. Water relations: A new dimension for niche separation between *Bouteloua gracilis* and *Agropyron smithii* in North American semiarid grasslands. *J. Appl. Ecol.* 19:647-658.
- Sala, O. E., W. K. Lauenroth, and W. J. Parton. 1982. Plant recovery following prolonged drought in a shortgrass steppe. *Agric. Meteorol.* 27:49-58.
- Leetham, J. W., J. L. Dodd, and W. K. Lauenroth. 1983. Effects of low-level sulfur dioxide exposure on decomposition of western wheatgrass (*Agropyron smithii*) litter under laboratory conditions. *Water Air Soil Pollut.* 19:247-250.
- Singh, J. S., W. K. Lauenroth, R. K. Heitschmidt, and J. L. Dodd. 1983. Structural and functional attributes of the vegetation of the northern mixed prairie of North America. *Bot. Rev.* 49:117-149.
- Singh, J. S., W. K. Lauenroth, and D. G. Milchunas. 1983. Geography of grassland ecosystems. *Prog. Phys. Geogr.* 7:46- 80.
- Webb, W. L., W. K. Lauenroth, and S. R. Szarek. 1983. Primary production and abiotic controls in native forests, grasslands and desert ecosystems in the United States. *Ecology* 64:134-151.
- Lauenroth, W. K., J. L. Dodd, and D. G. Milchunas. 1983. Response of a grassland to sulfur and nitrogen additions under controlled SO₂ exposure. *J. Environ. Exp. Bot.* 23:339-346.
- Milchunas, D. G., W. K. Lauenroth, and J. L. Dodd. 1983. The interaction of atmospheric and soil sulfur on the sulfur and selenium concentration of range plants. *Plant and Soil* 72:117-125.
- Singh, J. S., W. K. Lauenroth, H. W. Hunt, and D. M. Swift. 1984. Bias and random errors in estimators of net root production: A simulation approach. *Ecology* 65:1760-1764.
- Lauenroth, W. K., J. K. Detling, D. G. Milchunas, and J. L. Dodd. 1985. Impact of SO₂ exposure on the response of *Agropyron smithii* to defoliation. *J. Range Manage.* 38:16-20.
- Sala, O. E., and W. K. Lauenroth. 1985. Root profiles and the ecological effect of light rain showers in arid and semiarid regions. *Am. Midl. Nat.* 114:406- 408.
- Milchunas, D. G., W. K. Lauenroth, J. S. Singh, C. V. Cole, and H. W. Hunt. 1985. Root turnover and production by ¹⁴C dilution: Implications of carbon partitioning in plants. *Plant and Soil* 88:353-365.

Lauenroth, W. K., H. W. Hunt, D. M. Swift, and J. S. Singh. 1986. Response to Vogt et al. *Ecology* 67:580-582. [Response to a critique of Singh, Lauenroth, Hunt, and Swift 1984 root production paper in *Ecology*].

Lauenroth, W. K., H. W. Hunt, D. M. Swift, and J. S. Singh. 1986. Estimating aboveground net primary production in grasslands: A simulation approach. *Ecol. Model.* 33:297- 314.

Sala, O. E., W. J. Parton, L. A. Joyce, and W. K. Lauenroth. 1988. Primary production of the central grassland region of the United States: Spatial pattern and major controls. *Ecology* 69:40-45.

Lauenroth, W. K., O. E. Sala, D. G. Milchunas, and R. W. Lathrop. 1987. Root dynamics of *Bouteloua gracilis* during short-term recovery from drought. *Functional Ecology* 1:117-124.

Milchunas, D.G., O.E. Sala, and W.K. Lauenroth. 1988. A generalized model of the effects of grazing by large herbivores on grassland community structure. *American Naturalist* 132:87-106.

Coffin, D. P., and W. K. Lauenroth. 1988. The effects of disturbance size and frequency on a shortgrass plant community. *Ecology* 69:1609-1617.

Sala, O. E., M. E. Biondini, and W. K. Lauenroth. 1988. Bias in estimates of primary production: An analytical solution. *Ecological Modelling* 44:43-55.

Coffin, D. P., and W. K. Lauenroth. 1989. Spatial and temporal variation in the seed bank of a semiarid grassland. *American Journal of Botany* 76:53-58.

Liang, Y., D. L. Hazlett, and W. K. Lauenroth. 1989. Water use efficiency of five plant communities in the shortgrass steppe. *Oecologia (Berl.)* 80:148-153.

Milchunas, D. G. , W. K. Lauenroth, P. L. Chapman, and M. K. Kazempour. 1989. Effects of grazing, topography, and precipitation on the structure of a semiarid grassland. *Vegetatio* 80: 11-23.

Coffin, D. P., and W. K. Lauenroth. 1989. Small-scale disturbances and the successional dynamics in a shortgrass plant community: Interactions of disturbance characteristics. *Phytologia* 67:258-286.

Coffin, D. P. and W. K. Lauenroth. 1989. Disturbances and gap dynamics in a semiarid grassland: A landscape level approach. *Landscape Ecology* 3:19-27.

Coffin, D. P. and W. K. Lauenroth. 1990. A gap dynamics simulation model of succession in a semiarid grassland. *Ecological Modelling* 49:229-266.

Sala, O. E., R. A. Golluscio, W. K. Lauenroth, and A. Soriano. 1989. Resource partitioning between shrubs and grasses in the Patagonian steppe. *Oecologia (Berl)* 81:501-505.

Milchunas, D. G. and W. K. Lauenroth. 1989. Three-dimensional distribution of vegetation in relation to grazing and topography in the shortgrass steppe. *Oikos* 55:82-86.

Burke, I. C., D. S. Schimel, C. M. Yonker, W. J. Parton, L. A. Joyce, and W. K. Lauenroth. 1990. Regional modeling of grassland biogeochemistry using GIS. *Landscape Ecology* 4:45-54.

Coffin, D. P. and W. K. Lauenroth. 1990. Effects of western harvester ants (*Pogonomyrex occidentalis* Cresson) on a semiarid grassland and the successional dynamics of nest sites. *American Midland Naturalist* 123:226-235.

Milchunas, D. G., W. K. Lauenroth, P. L. Chapman, and M. K. Kazempour. 1990. Community structure relationships along a multi-disturbance gradient. *Journal of Vegetation Science* 1:375-384.

Coffin, D. P. and W. K. Lauenroth. 1991. Effects of competition on spatial distribution of roots of blue grama *Bouteloua gracilis* (H.B.K.) Lag. ex Griffiths). *Journal of Range Management* 44:68-71.

Biondini, M. E., W. K. Lauenroth, and O. E. Sala. 1991. Correcting estimates of net primary production: Are we overestimating plant production in rangelands? *Journal of Range Management* 44:194-198.

Burke, I. C., T. G. F. Kittel, W. K. Lauenroth, P. Snook, C. M. Yonker, and W. J. Parton. 1991. Regional analysis of the central Great Plains: Sensitivity to climate variability. *BioScience* 41: 685-692.

Hook, P. B., I. C. Burke, and W. K. Lauenroth. 1991. Heterogeneity of soil and plant N and C associated with individual plants and openings in the North American shortgrass steppe. *Plant and Soil* 138:247-256.

Milchunas, D. G. and W. K. Lauenroth. 1992. Carbon dynamics in a semiarid grassland and estimates of production by harvest, ¹⁴C dilution, and ¹⁴C turnover. *Ecology* 73:593-607.

Sala, O. E., W. K. Lauenroth, and W. J. Parton. 1992. Long term soil water dynamics in the shortgrass steppe. *Ecology* 73:1175-1181.

Coffin, D. P., and W. K. Lauenroth. 1992. Spatial variability in seed production of the perennial bunchgrass *Bouteloua gracilis* (H.B.K.) Lag. ex Griffiths. *American Journal of Botany* 79:347-353.

Milchunas, D. G., C. A. Lee, W. K. Lauenroth, and D. P. Coffin. 1992. A comparison of ^{14}C , ^{86}R , and total excavation for determination of root distributions of individual plants. *Plant and Soil* 144:125-132.

Lauenroth, W. K. and O. E. Sala. 1992. Long term forage production of North American shortgrass steppe. *Ecological Applications* 2:397-403.

Milchunas, D. G., W. K. Lauenroth and P. L. Chapman. 1992. Plant competition, abiotic, and long- and short-term effects of herbivores on demography of opportunistic species in a semiarid grassland. *Oecologia* 92:520-531.

Coffin, D. P., and W. K. Lauenroth. 1993. Successional dynamics of a semiarid grassland: Effects of texture and disturbance size. *Vegetatio* 110:67-82.

Burke, I. C. and W. K. Lauenroth. 1993. What do LTER results mean? Extrapolating from site to region and decade to century. *Ecological Modelling* 67:19-35.

Lauenroth, W. K., D. L. Urban, D. P. Coffin, W. J. Parton, H. H. Shugart, T. B. Kirchner, and T. M. Smith. 1993. Modeling vegetation structure-ecosystem process interactions across sites and ecosystems. *Ecological Modelling* 67:49-80.

Milchunas, D. G. and W. K. Lauenroth. 1993. A quantitative assessment of the effects of grazing on vegetation and soils over a global range of environments. *Ecological Monographs* 63:327-366.

Aguilera, M.O. and W.K. Lauenroth. 1993. Seedling establishment in adult neighbourhoods: intraspecific constraints in the regeneration of the bunchgrass *Bouteloua gracilis*. *Journal of Ecology* 81:253-261.

Aguilera, M.O. and W.K. Lauenroth. 1993. Neighborhood interactions in a natural population of the perennial bunchgrass *Bouteloua gracilis*. *Oecologia* 94:595-602.

Lee, C.A. and W. K. Lauenroth. 1994. Spatial distributions of grass and shrub root systems in the shortgrass steppe. *American Midland Naturalist* 132:117-123.

Hook, P.B. and W. K. Lauenroth. 1994. Root system response of a perennial bunchgrass to neighborhood-scale soil water heterogeneity. *Functional Ecology* 8:738-745.

Aguilera, M.O. and W.K. Lauenroth. 1995. Influence of gap disturbances and type of microsites on seedling establishment in *Bouteloua gracilis*. *J. Ecol.* 83:87- 97.

Hook, P.B., W. K. Lauenroth, and I.C. Burke. 1994. Spatial patterns of roots in a semiarid grassland: Abundance of canopy openings and regeneration gaps. *J. Ecol.* 82:485-494.

Lauenroth, W. K., O. E. Sala, D. P. Coffin, and T. B. Kirchner. 1994. Recruitment of *Bouteloua gracilis* in the shortgrass steppe: A simulation analysis of the role of soil water. *Ecological Applications* 4:741-749.

Milchunas, D. G. J. R. Forwood, and W. K. Lauenroth. 1994. Productivity of long-term grazing treatments in response to seasonal precipitation. *J. Range. Manage.* 47:133-139.

Milchunas, D. G. and W. K. Lauenroth. 1995. Inertia in plant community structure: State changes after cessation of nutrient enrichment stress. *Ecological Applications* 5:452-458.

Paruelo, J. M. and W. K. Lauenroth. 1995. Regional patterns of normalized difference vegetation index in North American shrublands and grasslands. *Ecology* 76:1888-1898.

Burke, I. C., W. K. Lauenroth, and D. P. Coffin. 1995. Soil organic matter recovery in semiarid grasslands: Implications for the Conservation Reserve Program. *Ecological Applications* 5:793-801.

Paruelo, J. M., W. K. Lauenroth, H. E. Epstein, I. C. Burke, M. R. Aguiar, and O. E. Sala. 1995. Regional climatic similarities in the temperate zones of North and South America. *Journal of Biogeography* 22:2689-2699.

Milchunas, D. G. A. S. Varnamkhasti, W. K. Lauenroth, and H. Goetz. 1995. Forage quality in relation to long-term grazing history, current defoliation, and water resource. *Oecologia* 101:366-374.

Dougherty, R. L., W. K. Lauenroth and J. S. Singh. 1996. Response of a grassland cactus to frequency and size of rainfall events in a North American shortgrass steppe. *Journal of Ecology* 84:177-183.

Coffin, D. P., W. K. Lauenroth, and I. C. Burke. 1996. Recovery of vegetation in a semiarid grassland 53 years after disturbance. *Ecological Applications* 6:538- 555.

Ihori, T., I.C. Burke, W.K. Lauenroth, D.P. Coffin. 1995. Effects of cultivation and abandonment on soil organic matter in northeastern Colorado. *Soil Science Society of America Journal* 59:1112-1119.

Epstein, H. E., W. K. Lauenroth, I. C. Burke, and D. P. Coffin. 1996. Ecological responses of dominant grasses along two climatic gradients in the Great Plains of the United States. *Journal of Vegetation Science* 7: 777-788.

W. K. Lauenroth. 1996. Application of patch models to examine regional sensitivity to climatic change. *Climatic Change* 34:155-160.

Humphries, H. C., D. P. Coffin and W. K. Lauenroth. 1996. An individual-based model of Alpine plant distributions. *Ecological Modelling* 84:99-126.

Coffin, D. P. and W. K. Lauenroth. 1996. Transient responses of North American grasslands to changes in climate. *Climatic Change* 34:269-278.

Singh, J. S., P. Bourgeron and W. K. Lauenroth. 1996. Plant species richness and species-area relations in a shortgrass steppe. *Journal of Vegetation Science* 7:645-650.

Aguiar, M. R., J. M. Paruelo, O. E. Sala and W. K. Lauenroth. 1996. Ecosystem responses to changes in plant functional type composition: An example from the Patagonian Steppe. *Journal of Vegetation Science* 7: 381-390.

Paruelo, J. M. and W. K. Lauenroth. 1996. Relative abundance of plant functional types in grasslands and shrublands of North America. *Ecological Applications* 6: 1212-1224.

Burke, I. C., W. K. Lauenroth and W. J. Parton. 1997. Regional and temporal variation in aboveground net primary production and net nitrogen mineralization in grasslands. *Ecology* 78:1330-1340.

Paruelo, J. M., H. E. Epstein, W. K. Lauenroth, and I. C. Burke. 1997. ANPP estimates from NDVI for the central grassland region of the U.S. *Ecology* 78:722-731.

Epstein, H. E., W. K. Lauenroth, I. C. Burke, and D. P. Coffin. 1997. Regional productivity patterns of C₃ and C₄ functional types in the Great Plains of the United States. *Ecology* 78:722-731.

Sun, G., D. P. Coffin and W. K. Lauenroth. 1997. Comparison of root distributions of species in North American grasslands using GIS. *Journal of Vegetation Science* 8:587-596.

Dodd, M. B. and W. K. Lauenroth. 1997. The influence of soil texture on the soil water dynamics and vegetation characteristics of a shortgrass steppe ecosystem. *Plant Ecology* 133:13-28.

Epstein, H. E., W. K. Lauenroth and I. C. Burke. 1997. Effects of temperature and soil texture on ANPP in the U. S. Great Plains. *Ecology* 78:2628-2631.

Chapin, F. S., O. E. Sala, I. C. Burke, J. P. Grime, D. U. Hooper, W. K. Lauenroth, A. Lombard, H. A. Mooney, A. R. Mosier, S. Naeem, S. W. Pacala, J. Roy, W. L. Steffen and D. Tilman. 1997. Ecosystem consequences of changing biodiversity. *BioScience* 48:456-52.

Epstein, H. E., W. K. Lauenroth, I. C. Burke, and D. P. Coffin. 1998. Regional productivity patterns of plant species in the Great Plains of the United States. *Plant Ecology* 134:173-195.

- Paruelo, J.M., E. G. Jobbagy, O. E. Sala, W. K. Lauenroth and I. C. Burke. 1998. Functional and structural convergence of temperate grassland and shrubland ecosystems. *Ecological Applications* 8:194-206.
- Golluscio, R. A. O. E. Sala and W. K. Lauenroth. 1998. Differential use of large summer rainfall events by shrubs and grasses: a manipulative experiment in the Patagonian steppe. *Oecologia* 115:17-25.
- Burke, I. C., W. K. Lauenroth, M. A. Vinton, P. B. Hook, R. H. Kelly, H. E. Epstein, M. R. Aguiar, M. D. Robles, M. O. Aguilera, K. L. Murphy and R. A. Gill. 1998. Plant-soil interactions in temperate grasslands. *Biogeochemistry* 42: 121-143.
- Milchunas, D. G., W. K. Lauenroth and I. C. Burke. 1998. Livestock grazing: animal and plant biodiversity of shortgrass steppe and the relationship to ecosystem function. *Oikos* 83:65-74.
- Coffin, D. P., W. A. Laycock and W. K. Lauenroth. 1998. Disturbance intensity and above- and belowground herbivory effects on long-term (14 y) recovery of a semiarid grassland. *Plant Ecology* 139:221-233.
- Lane, D. R., D. P. Coffin and W. K. Lauenroth. 1998. Effects of soil texture and precipitation on above-ground net primary productivity and vegetation structure across the central grassland region of the United States. *Journal of Vegetation Science* 9:239-250.
- Dodd, M. B., W. K. Lauenroth and J. M. Welker. 1998. Differential water resource use by herbaceous and woody plant life-forms in a shortgrass steppe community. *Oecologia* 117:504-512.
- Paruelo, J. M. and W. K. Lauenroth. 1998. Interannual variability of NDVI and its relationship to climate for North American shrublands and grasslands. *Journal of Biogeography* 25:721-733.
- Singh, J. S., D. G. Milchunas, and W. K. Lauenroth. 1998. Soil water dynamics and vegetation patterns in a semiarid grassland. *Plant Ecology* 134:77-89.
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